Raytheon

2001-2002 USAP AIR TRANSPORTATION PROTOCOL

(Revised: July 23, 2001)

UNITED STATES ANTARCTIC PROGRAM

National Science Foundation
Contract OPP 0000373

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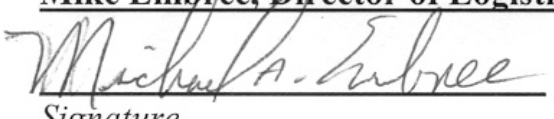
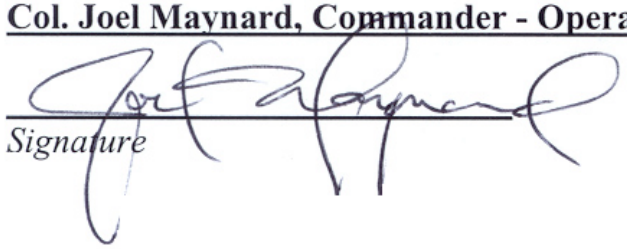


Signature

Col. Joel Maynard, Commander - Operation Deep Freeze, USAF



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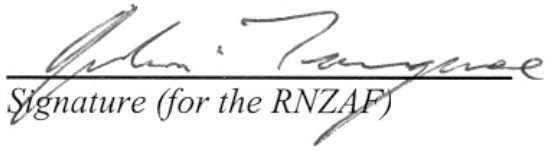
Julian Tangaere, Operations Manager, New Zealand Antarctic Institute



Signature (for the RNZAF)

cc. Dave Bresnahan, NSF Representative

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1.0 Introduction

1.1 Objective

The logistical success of the United States Antarctic Program depends upon close and effective coordination between the New York Air National Guard 109th Airlift Wing, McChord 62nd Airlift Wing, March 452nd Air Mobility Wing, USAF Detachment 13 - Operation Deep Freeze, Royal New Zealand Air Force, and the RPSC Antarctic Terminal Operations Department. Bi-weekly rotations of ANG personnel and year-to-year changes in ATO staffing make continuity and standardization difficult to maintain verbally. The purpose of the USAP Air Transportation Protocol is to establish and document working guidelines between the above organizations. In some cases it elaborates beyond the strict USAF/ANG/ATO/RNZAF interface so that each organization may more fully understand the functioning of the other. The material contained herein has been derived from existing regulations, training worksheets or from agreements and lessons learned during the course of a season on the ice. It is anticipated that this document will undergo continuous revision as additional mutually beneficial work practices are created, thus capturing these lessons-learned for the benefit of new USAP personnel. For FY2001-02, the ANG/USAF C-130 and LC-130 operations will be included into the USAP Air Transportation Protocol. The USAF C-141, C-17, and RNZAF C-130 guidelines will be added the following season. New anti-hijack and terrorism procedures, an air-drop storage facility, and aircrew shuttle issues will be evaluated during Austral Summer 2001-02. Any agree-upon changes will be included in the next revision of the protocol.

1.2 Authority

This document is designed to augment, not supercede, existing regulations and policies. It is not designed to restrict the decision-making latitude granted the CODF, 109th Deployment Commander, ATO Manager or a Pilot-in-Command in dealing with their respective personnel. This document is provided to USAP personnel for guidance based on prior experience. They may deviate from this guidance if there is agreement by all involved parties should such deviations prove to be superior to the information found within this document. These improvements should be noted for assessment during future revisions. All unresolved on-ice aircraft/cargo handling issues, particularly those identified on Polar Mission Summaries, will be resolved by direct communication and cooperation between the CODF and ATO Manager to minimize the impact on flight/cargo operations. ATO will send a representative to the daily McMurdo ODF meetings to mitigate any issues before they become major problems. All personnel affected by the USAP Air Transportation Protocol should be familiar with its contents prior to deployment. To facilitate this, ATO will distribute CD copies to the relevant agencies once they provide the ATO Manager with the number of copies required.

1.3 Approval

Adoption of the guidelines presented in this book is contingent upon their review and acceptance by the RPSC Director of Logistics, the Commander of Operation Deep Freeze, and the AntNZ Operations Manger.

1.4 Revisions

The Raytheon ATO Manager will maintain custodial responsibility for this document. The CODF, 109th Airlift Wing Commander, AntNZ Operations Manager, and the ATO Manager will evaluate future revisions prior to their approval and incorporation into the USAP Air Transportation Protocol. These guidelines will be reviewed annually and updated by the ATO Manager prior to submission to the authorizing personnel in Section 1.3.

1.5 References

- Air Force Joint Manual 24-204 Preparing Hazardous Materials for Military Air Shipments
- AFJPAM 24-207 Preparation of Freight for Airlift Transportation
- U.S. Code of Federal Regulations Part 49
- IATA Resolution 618 Attachment "A": Dangerous Goods Regulations
- International Maritime Dangerous Goods (IMDG) Code
- Operation Deep Freeze C-141 Loadmaster Guide
- USAP Airlift of Hazardous Cargo
- USAP Instructions on Packaging and Shipping
- DOD Postal Manual 4525.6-M, Vol. I, Chapter 12, Paragraph 1203.3a
- USAF AFI 11-2C-130, Chapter 10, Annex B (109th AW local unit policies); C-130 Operations Procedures
- AMCI 11-208; Air Mobility Command Passenger Regulations
- USAF Loadmaster Blue Book (Operating Weight and Moments)

2.0 Aircraft Pallet Building

2.1 Limitations

The following limitations must be carefully adhered to for building USAP aircraft pallets:

2.1.1 Height/Weight Table

Destination	Aircraft Type	Pallet Location	Height (inches)	Weight (lbs.)
CHC	C-141	Cabin	96	10,000
CHC	C-141	Ramp	76	7,500
CHC	LC-130 / C-130	Cabin	96 (Note 2)	10,000 (Note 1)
CHC	C-130	Ramp	76 (Note 2&5)	4,664
CHC	LC-130	Ramp	76 (Note 2&6)	4,664
NPX	LC-130	Cabin	96 (Note 2&8)	7,500

NPX	LC-130	Ramp	76 (Note 2&6)	4,664
Field Camp	LC-130	Cabin	86 (Note 2&4)	5,500 (Note 9)
Field Camp	LC-130	Ramp	76 (Note 2&6)	4,664 (Note 9)
Any Destination	C-130 or C-141	Cabin or Ramp	**(When using a** 45 (Note 7)	**top net ONLY)** 2,500

Notes: 1) Pallet Position #5 is limited to 8,500 lbs.
2) A 6-inch aisleway on the LEFT side is required.
3) A 6-inch aisleway on the RIGHT side is required.
4) A low center of gravity is required to permit cargo drifting.
5) A 20 X 20 inch cut out on the forward LEFT side is required for the head.
6) A 20 X 20 inch cut out on the forward RIGHT side is required for the head.
7) Same aisleway requirements apply. A bellyband is required not higher than 8 inches above the pallet to prevent small cargo from slipping under the net.
8) Single pallets may be sent at maximum weight capacity but an annotation must be made on the FSM to indicate the need for a sled to be used for off-load.
9) Consideration for maximum pallet weight should be based upon the MHE equipment capacity at the field camp.

2.1.2 Passenger to Pallet Capacities

The following table outlines the maximum passenger/pallet configurations that can be accommodated on USAP C-130 aircraft:

66 Passengers	2 Pallets
48 Passengers	3 Pallets
30 Passengers	4 Pallets
14 Passengers	5 Pallets

The next table outlines the maximum passenger/pallet configurations that can be accommodated on USAP LC-130 aircraft:

80 Passengers/Crew	1 Pallet
56 Passengers	2 Pallets
40 Passengers	3 Pallets
18 Passengers	4 Pallets
8 Passengers	5 Pallets

Note: For LC-130 operations, there are no centerline seats for the 8 & 18 passenger configurations due to the position of the cargo winch. The LC-130 capacities include one ramp pallet. The 80 Passenger/Crew limitation is primarily based on LC-130 over-water flight maximum person life raft capacity.

2.1.3 Aisle Space Requirements

Aisle space requirements are outlined in the Section 2.1.1 Notes. For every flight, a cutout on the ramp pallet must be made to accommodate the aircraft lavatory in the deployed position. In cases where the nature of the cargo does not allow for the cutout, passengers must be notified at passenger transportation time and rescheduled for an alternate flight, if they desire. Raven Ops should be notified as soon as possible.

2.1.4 Coordination for Over-Limit Loads

If cargo must be built beyond the limits specified in Section 2.1.1, ANG personnel must approve the load. This should be accomplished no later than the night before the scheduled flight by contacting Raven Ops and requesting that the ANG Senior Loadmaster inspect the pallet either at the ATO cargo yard or at the airfield. The senior Loadmaster should initial either the pallet identification card or the flight summary manifest (FSM) to indicate that the load is acceptable. If a load is described and approved over the phone, the ATO Load Planner must note the verbal approval on the flight summary manifest. Any over limits load originating from field camps or the South Pole must be coordinated in advance with the Assistant Supervisor, ATO by the Fixed-Wing Coordinator or South Pole Cargo Coordinator, respectively. The limit that is exceeded on an approved pallet should be noted next to that pallet on the flight summary manifest. Any notice that can be provided on the outbound FSM is acceptable.

2.2 Restraint Devices

2.2.1 Pallets

The 463L pallet is constructed of a corrosion-resistant aluminum surface with a balsa wood core. A lip forming the pallet perimeter provides 22 tiedown rings for securing the cargo nets. The tiedown rings are capable of 240 degrees of free movement in a vertical plane that intersects the pallet edge at a right angle. The tiedown ring capacity is 7,500 pounds in any direction. Pallet overall dimensions are 108 inches by 88 inches. Its working surface is 104 inches by 84 inches, pallet weight is 290 pounds, and it has a maximum load capacity of 10,000 pounds when stacked to a height not to exceed 96 inches. The maximum single weight for a pallet stacked above 96 inches (not to exceed 100 inches) shall not exceed 8,000 pounds. The pallet permits maximum loads, including wheel loads, of 250 PSI up to the maximum capacity. Loads that exceed the PSI limit must be shored to reduce PSI to the maximum allowable. Pallets may be stacked for transport. Separation using three pieces of 4”x4”x5’ wooden dunnage must be provided between the first (bottom pallet) and remaining pallets to allow guide rail clearance. Secure stacked pallets to the bottom pallet with straps or chains to meet restraint requirements. Height of stacked pallets must not exceed 20 pallets, excluding the bottom pallet. Do not stack empty pallets upside-down for transport.

2.2.2 Cargo Nets

Use a pair of HCU-7/E cargo nets around the side of a pallet and HCU-15/C cargo net across the top to secure the load to the pallet. When properly secured these three nets

will provide all necessary restraint to a maximum height of 100 inches, including longitudinal and lateral restraint requirements for palletized loads up to 10,000 pounds. These three nets weigh 64 pounds. Top net fastening devices (hooks) shall not be connected to side net webbing, or bottom row of side net rings. Top net fastening devices shall not be routed under side net webbing and then back up to a side net ring. Top and side nets should be installed so that all hooks point down. Netted cargo shall not be loaded into aircraft until fastening devices are properly connected, the prepared pallet is quality-assured by the MC1, and it is ultimately inspected by the Loadmaster.

2.2.3 Aircraft Straps

The type CGU-1/B tiedown consists of a 20-foot long nylon webbing strap on which there is a metal hook at one end and a ratchet assembly with a hook at the other. When in use, the stationary hook on one end of the strap is hooked to one of the tiedown fittings. The strap is then passed over the load and the ratchet assembly attached to another tiedown fitting. The strap is then tightened by use of the ratchet, which has a handle that rotates 60 degrees per ratchet, and moves 120 degrees to release the spool for letting out webbing. The spool has a capacity sufficient to take up approximately 1 foot of webbing after initial tensioning. Strap hooks should be attached such that the points always face in toward the load. Each strap is rated for a maximum of 5,000 pounds of restraint with no twist, frays or cuts. Straps with this type of damage shall not be used for aircraft restraint. ATO personnel will store any damaged, but serviceable, straps for use in other USAP operations.

2.2.4 Chains

The MB-1 and MB-2 restraining devices have a hook and a chain designed to restrain a load of 10,000 and 25,000 pounds, respectively. Do not use a mixture of straps and chains for restraint. Loads shall be restrained by like devices only.

2.2.5 Condition of TDE and Pallets

Pallets with missing D-rings exposed/deteriorated balsa core, extreme delaminating or evidence of fungus stain/dampness will not be loaded prior to maintenance. A damaged pallet cannot maintain restraint requirements and would be a hazard to flight safety. Damaged pallets should be marked and maintained in the ATO cargo yard until they can be retrograded via vessel for repair. Bad pallets will be stacked with a single bad pallet as a base, 3 pieces of 4”x4”x5’ wooden dunnage, 9 bad pallets stacked above, everything strapped together with metal strapping. Broken chains and straps will be collected in the "Bad TDE" bins at the airfield and ATO cargo yard for retrograde via vessel or proper disposal.

2.3 Plastic Covers (Pallet Bags)

Pallets arriving from and being shipped to Christchurch will have a plastic cover to protect against precipitation while in New Zealand. Pallets destined for McMurdo will

have this cover under the cargo nets. Throughput pallets to the South Pole or field camps will have the plastic cover over the cargo nets to facilitate removal. No plastic covers should be placed on cargo moving on-continent. Their use is limited to cargo between McMurdo and Christchurch.

2.4 Air Drop Load Preparation

Airdrop loads will be prepared in accordance with United States Air Force regulations. ATO maintains an inventory of prepared air-dropable fuel bundles. These loads are constructed and the parachutes rigged by New Zealand Defense Forces or USAF personnel and are inspected by USAF or NYANG personnel. ATO will provide up to three cargo persons on an "as-needed basis only" to assist USAF or NZDF riggers with preparing air drop bundles. ATO has assumed control of the Air Drop Equipment (ADE) Inventory and Budget from Christchurch, NZ. USAF or NZDF riggers deployed to McMurdo will conduct a complete Air Drop Equipment (ADE) inventory upon arrival in McMurdo and once again prior to redeployment at season-end. These two inventories will be provided to the Supervisor, MCC in an electronic format to facilitate subsequent ADE inventory replenishment and operational planning.

3.0 LC-130 Loading/Offloading Guidelines

No manifested cargo shall be kept off any flight without notifying the Supervisor, MCC or Assistant Supervisor, ATO beforehand to assess cargo criticality and alternate loads. The Supervisor, South Pole Logistics and Fixed-Wing Coordinator must be notified under similar circumstances at the South Pole and field camps. They, in-turn, will notify the Supervisor, MCC or Assistant Supervisor, ATO prior to aircraft departure. South Pole tanker flights normally carry 1 ramp pallet comprised of high-priority cargo to keep it moving in the system (see Section 7.3.3). ATO alone determines replacement cargo based on USAP priority requirements. If duty ATO personnel are not available in such situations, call or page the ATO Manager immediately.

The Raven Ops Deputy Deployment Commander will contact the Assistant Supervisor, ATO or MC1 immediately upon determining that a tail-swap or cargo-switch is required - particularly during the night shift. This will ensure that ATO can apply the proper assets, personnel, and time to effectively carry out the changes with minimal disruption to the daily flight schedule. The Deputy Deployment Commander shall keep the MCC informed of any changes that affect airfield cargo handling/pax operations on a 24-hour/day basis (see Section 8.3).

ATO will be permitted to pre-stage cargo near LC-130 aircraft in areas authorized by the 109th Air Wing Commander and the RPS Airfield Manager to ensure greater flexibility and efficiency in airfield cargo handling operations during the night shift.

3.1 Arrival Times

Pegasus Runway cargo arrival times, equipment needs, and pax/ground support/aircrew transport requirements will be assessed as the new Pegasus operation develops.

3.1.1 Loadmasters

Loadmasters should plan on arriving at the aircraft 2.5 hours prior to the scheduled departure so that the aircraft is ready to receive cargo 2 hours prior to the scheduled departure time.

3.1.2 Cargo Handlers

Cargo handlers should have cargo on sleds or forklifts and be ready to approach the aircraft 2 hours prior to the scheduled departure time. ATO may pre-stage cargo in authorized areas on the ramp when required (see Section 3.0)

3.1.3 Flight Crew

The aircraft flight crew should arrive approximately 1.5 hours prior to the scheduled departure to permit a preflight inspection and aircraft movement to the fuel pits for fueling.

3.1.4 Passengers

Air Services Representatives will establish transport times for passengers so that they arrive at the airfield 1 hour prior to the scheduled departure time. An Air Services Representative will remain with the passengers at the passenger terminal or in the Airporter vehicle until given permission by Skier Maintenance to approach the aircraft - typically once fueling is complete (see Section 4.4.1). An Air Services Representative will remain at the airfield until the passenger-carrying aircraft has taken off.

3.2 K-Loaders

It is not anticipated that Air Force K-Loaders will be used in Antarctica to load/unload aircraft in the foreseeable future. If the NSF later directs such usage, USAF K-Loaders will not be transported to Antarctica without first undergoing proper winterization and equipment-specific testing. K-Loaders will only be utilized in Antarctica with reliable USAF technical support readily available, proper operator training, an appropriate spare-parts inventory on station, a tailored MAPCON program for tracking all labor and repair costs, on-site redundancy for critical systems, and sufficient numbers of technical manuals for the RPS Operations Department to refer to. Any K-Loaders brought to Antarctica should remain on-ice from season-to-season for hydraulic acclimatization and operational reliability.

3.3 Cargo Sleds

3.3.1 Description

At McMurdo and South Pole, ATO utilizes several forty-foot roller-topped cargo sleds to off/on-load pallet trains in lieu of a K-Loader. These sleds are approximately height-matched to the LC-130 and have no vertical or side adjustment capability. The sleds have movable posts to arrest pallet movement while loading and tiedown attachments to secure pallets during sled positioning evolutions. Five pallets can be accommodated on each sled. All changes to cargo sled configuration, cargo handling processes, marine containers/MILVANs or any other equipment modifications/purchases must be approved of and implemented via the USAP Airfield Cargo Handling Guide: Process Change Control Procedure Form (see Appendix A).

3.3.2 Positioning at Aircraft

A wheeled forklift or tracked loader moves the cargo sled and is attached to its tow bar via a pintle-type hitch and Balderson "Stinger" push bar. The only pivot point is the attachment between the tractor and the sled. The use of chains to attach a forklift or tractor to a sled will be avoided because of the demonstrated recoil hazard that a snapping chain presents when the sled is jerked into motion. The sled should be aligned with the aircraft as closely as possible at least two sled-lengths behind the aircraft (approximately 80 feet), which is not possible at the Williams Field fuel pits (see Sections 3.3.3 and 7.3.2 for restrictions). The Loadmaster may be positioned centerline or other locations on the ramp to direct the sled to the aircraft. At the Loadmaster's discretion, the MC1 on the ramp may direct the sled from a position walking beside the midpoint of the sled. Direction should not occur from both locations simultaneously to avoid confusion. Slow, continuous movement of the sled is desired since once stopped, it often requires a sharp jolt to get the sled moving again, particularly when loaded, due to the frequently occurring friction-freezing phenomenon. Lateral movement of the sled can be accomplished with a forklift pushing on the side of the sled; however, this is to be avoided since improper positioning has caused damage to palletized cargo on the sled or to the restraining devices between the pallet and the sled. If a sled is mis-aligned or stops and becomes stuck within 10' of the aircraft ramp, it must always be pulled "away" from the aircraft and repositioned. The aircraft winch should not be used to pull the sled and/or aircraft together. Exercise caution when withdrawing a loaded sled from an aircraft since the end of the sled often moves laterally when the runner friction is first overcome.

3.3.3 Techniques to Adjust Ramp Height

There are three methods for loading cargo from a cargo sled onto a LC-130 cargo ramp when the two platforms are not vertically aligned. The first method uses the cargo ramp and the ramp support "milk stool" to match the height difference, move the pallet onto the ramp, and then adjust the ramp for level positioning of the pallets onto the aircraft. If this method is utilized, the weight limitations of the cargo ramp must be considered. The second method uses the aircraft skis to level the cargo ramp/cargo deck in cases of pallet marriages of excess length or weight to be lifted by the cargo ramp. Finally, areas of the aircraft parking ramp known to be uneven must be graded by heavy equipment to achieve a level parking and loading surface.

Repeatedly used fixed parking spots on the ramp are especially susceptible to depression formation, which interferes with ramp/sled alignment. The RPS Airfield Manager prohibits cargo operations at the Williams Field fuel pits, regardless of the flight schedule, due to the apron's susceptibility to damage from heavy equipment. The Airfield Manager may grant a waiver on an "emergency case-by-case basis only" after consulting with the ATO Manager or Supervisor, MCC. Proper flight scheduling normally eliminates the need for fuel pit cargo operations.

3.4 Forklifts

Single pallet loading and unloading is typically accomplished with a forklift. The forklift is directed to a position aft of the aircraft by a Loadmaster positioned centerline on the cargo ramp or beside the forklift in view of the driver. The pallet is brought slowly forward until it is inside the aircraft and over the cargo ramp. The aft section of the pallet is rested upon a wood block to allow the forklift tines to be repositioned to the end of the pallet. The end of the pallet is then lifted to remove the wood block, then set down upon the cargo ramp rollers, and ultimately pushed inside the aircraft.

To unload, the tips of the forklift tines are rested on the end of the ramp (forward of the ramp stirrup guard). This eliminates any sudden drop in the forklift carriage thus preventing possible damage to the ramp. The forklift tines should be inclined backward so that a pallet may be pushed off the ramp and will be carried by momentum to the back of the forklift carriage. All cargo and aircrews working aircraft at the South Pole shall be aware of the need minimize their exhaust-exposure time behind operating aircraft and take required precautions, such as wearing respirators and using faster MHE when available.

3.4.1 Forklift Tines

Bare tines are the preferred method for Antarctic cargo operations requiring single pallet handling on and off aircraft. Roller tines should always be avoided due to their inherently dangerous nature and the additional required maintenance. Non-military cargo handlers are not properly trained in roller tine usage nor do they have experience using them on Antarctica's uneven, snow-covered surfaces. Roller tines generate other safety hazards such as forcing cargo handlers to climb onto tall, icy flatbed trailers and cargo Deltas to unhook the pallet securement straps required for transport. This slows down cargo handling operations, which interferes with flight scheduling. Bare tines should always be used in Antarctica.

3.5 Hand Signals

Only one individual will provide hand signals to the forklift driver in the vicinity of the aircraft. Normally this will be the responsibility of the aircraft Loadmaster, however, at his discretion this may be delegated to the ATO MC1. The individual providing forklift signals will be positioned either on the aircraft ramp or alongside the forklift, in full view of the operator. The signalman will take appropriate precautions to avoid moving

equipment safety hazards. A forklift operator receiving multiple or conflicting signals shall stop all operations until the situation is clarified. Hand signals may be augmented with verbal commands relayed by radio headset.

3.6 Winches

The portable cargo winch weighs approximately 290 pounds and is attached to any two fittings rated at 10,000 pounds or greater. The winch is provided with 200 feet of 3/8-inch aircraft cable and is capable of winching up to 32,000 pounds of cargo on a horizontal surface with the aid of snatch blocks and multiple-purchase cable configurations. Each moving sheave added to the system doubles the weight that can be hauled. In the single line configuration (direct connection from winch to load) the max capacity is 6,500 pounds. If a requirement exists to winch a pallet into or out of an aircraft, at least two attachment points (preferably the D-rings on each corner of the pallet) shall be used. All personnel involved in aircraft cargo winching operations shall remain alert for cable fouling and pallet jamming. Any person detecting an unsafe condition has the authority and responsibility to immediately halt the operation and notify the senior Loadmaster of the problem.

3.7 Pallet Sequencing

The skis on the LC-130 aircraft make it inherently nose-heavy. Therefore, every effort should be made to place heavier cargo toward the rear of the aircraft within the limits established in Section 2.1.1. Exceptions to this include ice core pallets and baggage pallets on flights to Christchurch, which should normally be the last pallets on the aircraft in order to minimize off-load time and facilitate customs clearance. Weight and Balance considerations shall be taken into account at all times.

3.8 Loose Load

Loose load (L/L) is defined as cargo that is not palletized when it's loaded on the aircraft. Loose load may be oversized/outsized cargo, cargo arriving too late to be palletized, mail, or even small amounts of hazardous material. Loose Load cargo is tracked by its TCN number and will be handed directly to the aircraft Loadmaster. It is typically stowed centerline, forward of the palletized cargo and restrained by cargo straps directly to the cargo floor. Loose load items should NEVER be added to a pallet on the aircraft since these items have their own TCNs and are not accounted for on that pallet. Often, items with special handling requirements are sent as Loose Load so that individual attention may be given to the item. ATO personnel receiving cargo will be expecting loose load items to be handed to them separately upon arrival and offload. Use of the Flight Summary Manifest (FSM) is required to ensure all items manifested are received and off-loaded.

3.9 Ski Combat Offloading

3.9.1 Description of Technique

To Ski Combat Offload cargo the aircraft cargo ramp is lowered, the pallets are released and the aircraft is taxied forward as the pallets roll out of the aircraft. Drifting cargo involves lowering the cargo ramp below the horizontal until it is approximately 18 inches above the ground. Single pallets are slid down the ramp as the aircraft taxi's slowly forward.

Double or triple married pallets may be offloaded without ballast using combat offload procedures, provided their weight does not exceed 12,000 pounds and the height of each pallet falls within the cargo height jettison limit of the cargo loading manual. This height limit is approximately 97 inches for a T-2 pallet. Married pallets over 12,000 pounds may be offloaded using this method provided ballast or cargo equal to the difference between 12,000 pounds and the weight of the pallets to be offloaded remains in compartments C through F during the offload. If the pallets are not married together, the 12,000-pound limit does not apply. Recommendation for South Pole construction cargo: Load single pallets with sheetrock, which is quite heavy, and drop them off individually. If they are married, then the aircraft may need to make a second pass to offload all of the pallets or they may not be drifted as close together as possible. Loading the pallets as singles would permit dropping of all five or six pallets at once.

3.9.2 Authority to Conduct/Refuse

ATO has the responsibility to identify/refuse cargo to be drifted/combat off-loaded. The RPS Airfield Manager prohibits the drifting/combat-offloading of aircraft at Williams Field.

3.9.3 Consideration of Damage

The drifting or ski combat offloading of cargo may subject the load to severe and asymmetrical forces that may result in damage to the pallet or the items contained on it. Considering the cost invested to get each piece of cargo to McMurdo, the risk of damage to that cargo in shipping it to its final destination is unacceptable. Therefore, drifting cargo will be considered routine procedure only to those field camps without heavy equipment available to conventionally offload the aircraft. In such cases, ATO load crews will ensure that the cargo is sufficiently restrained to withstand the forces and impacts associated with drifting. Cargo sent to the South Pole will not be drifted or combat offloaded unless the MCC Supervisor/Asst. Supervisor, ATO give approval after consulting with the Supervisor, South Pole Logistics and prior to the flight departing McMurdo. Low temperatures at South Pole will typically be the motivation to allow drifting or ski combat offloading of cargo and such authorization will be explicitly noted on the Flight Summary Manifest (see South Pole Drift Lanes in Section 7.1.4) Tanker flights should be scheduled in lieu of cargo flights whenever contrail conditions exist provided that no critical cargo is on-hand for transport (see Sections 3.0, 7.3, and 7.4).

3.10 Snowmobiles and Vehicle Loading

Snowmobiles being transported to the field are for the exclusive use of grantees. All snowmobiles will be transported using a 463L aircraft pallet and 5K tie-down straps. They are not to be driven on or off an aircraft or around the ramp. They should be placed on a pallet and moved only in that manner by cargo sled or loader. Under certain circumstances, however, snowmobiles will not be on pallets when they return from field camps. One of the primary concerns is that some machines' engines are tailored for high-altitude-use-only and may be damaged by operating them in McMurdo. Snow machines checked out of the MEC as satisfactory must arrive that way at the field site of their intended use.

3.11 Use of CONEX Boxes/Marine Containers/MILVAN Containers

Pre-packed CONEX boxes, Marine Containers, and MILVANS will not be used to ship cargo in USAP aircraft for the following reasons: these containers are oversized at 102" in height without pallets and do not have a bottom suitable for aircraft loading. The plywood bottom often splinters and can cause the container to get stuck in the rollers on the aircraft. The loading of these containers is not under ATO control and as a result they may be overweight, off-balance, and heavier than manifested, which can seriously affect the flight characteristics of the aircraft. Furthermore, hazardous materials contained within them are not always declared by the shipper - a fineable violation of federal regulations and a potential hazard to the flight crew, passengers, the aircraft, and other cargo. Finally, these containers use more resources (ACL) than they save (manpower required to load/unload cargo). The NSF will scrutinize the movement of these containers each season. Specific situations may require CONEX Box, MILVAN, and Marine Container usage and transport by air. For example, NASA's LDB Program moves its cargo to Antarctica in high-quality marine containers aboard C-17s on an annual basis. Any container modifications required to facilitate on-continent air transport must be submitted via the USAP Air Transportation Protocol Process Change Control Procedure (see Appendix A). Special consideration will also be given to dewar transports in consultation with the ATO Hazardous Cargo Specialist and RPS Cryogenics Technician. Same-day transloads between aircraft in McMurdo are the most efficient way to transport dewars by air between Christchurch and the South Pole.

3.12 Towbars

The USAF will stage appropriate aircraft towbars for immediate use at the specific McMurdo airfields where related aircraft operate.

4.0 Passenger Operations

4.1 Bag Drag Procedures

The scheduled time for bag drag will be posted with the flight manifest. All passengers listed on the manifest (including military personnel), with the exception of Distinguished Visitors, are required to attend bag drag. Bag drags will typically occur the evening before a scheduled flight. If more than 40 passengers are scheduled for a flight, the

manifest will be split with different times for bag drag. Passengers may make appointments for special bag drag times with the Air Service Representatives. For ANG personnel this request is coordinated through the 109th First Sergeant. Any arrangements made concerning 109th personnel will be handled between the First Sergeant and the Asst. Supervisor, Passenger Operations.

The following procedure/chain-of-command will be followed for late Friday aircrew bag drags and missing military bag drag personnel:

1. The Assistant Supervisor, PAX Ops will obtain a list containing late shift aircrew members from the First Sergeant.
2. If the Assistant Supervisor PAX Ops cannot obtain this list by 1730 on FRIDAY (before rotator), the Asst. Supervisor will page the First Sergeant.
3. If Assistant Supervisor PAX Ops still doesn't have the required information or is missing military personnel, the Asst. Supervisor will page the 109th EAS Commander.
4. If the 109 EAS Commander is unavailable, the Asst. Supervisor will page the CODF.
5. Last minute changes are unavoidable. USAF/ANG personnel should call or page the Assistant Supervisor, Passenger Ops (anytime) with all new information.

(The ANG frequently rotates personnel, so it is preferable to contact them by job titles whenever possible.)

All passengers must bring the following to bag drag:

"All" checked and carry-on baggage with nametags attached.
Required ECW gear. ECW gear need not be worn; it can be hand-carried, but not packed in checked bags.
Passport / Military ID (if flying on intercontinental flight)

Passengers and baggage will be weighed, checked, all excess/checked bags will be taken to be palletized, and travel cards and customs forms (intercontinental flights) will be issued. Passengers will be reminded to check the ATO Flight Channel, Passenger Information Line and Manifest postings for transport and mission number changes.

A "Bellboy" passenger/baggage pickup service is typically available upon request up to 20 minutes prior to the scheduled bag drag time. Contact an Air Service Representative to arrange scheduling.

4.2 Baggage Limitations

4.2.1 Carry-On Baggage

Passengers are limited to one carry-on bag that must fit under their seat on the aircraft. ATO personnel and the aircraft loadmaster will actively enforce this rule. At bag drag, passengers will be asked to place their carry-on bag in a wooden box to demonstrate that it does not exceed size limitations (24"x15"x9" (61cmx38cmx23cm). Standard USAP issued orange bags are acceptable as carry-on baggage provided they are not overstuffed.

A laptop computer may be carried on the aircraft, in addition to the carry-on bag, with the understanding that it will remain on the passenger's lap for the duration of the flight. All excess South Pole baggage will be collected by South Pole Logistics personnel prior to transportation time and palletized. Any redeploying South Pole passengers manifested on straight-through flights or McMurdo passengers detected carrying excess baggage at transportation time will relinquish such baggage to ATO for palletization and pick-up in Christchurch, NZ.

Passengers who arrive for Transportation and have in their possession a carry-on bag that is obviously too big to fit in the wooden box will be notified that their bag(s) may be taken from them and they will not have access to such bags during the flight. If numerous personnel arrive for Transportation with oversized carry-on bags, the ATO MC1 at the airfield must be notified at once. The MC1 will then contact the Loadmaster to ensure there is room for these items. If there is insufficient room, ATO will collect the oversized carry-on bags for palletization at the MCC or airfield.

4.2.2 Checked Baggage

The number of checked bags is not limited, however, the total weight of checked baggage may not exceed 75 pounds (125 pounds for winter over personnel). Each bag must be tagged with the passenger's last name, first name, and the flight number.

4.3 Manifests

4.3.1 Crew Manifests

The most up-to-date crew manifests for each flight will be provided by the 109th First Sergeant to an Air Services Representative at the MCC. If this manifest is not available at the time the flight information is posted, then Air Services personnel will obtain the crew manifest from the daily flight schedule published by Air Operations (Raven Ops) the previous evening.

4.3.2 Passenger Manifests

Manifests for bag drag, transport, and flights will be created by Air Services personnel and posted at the Galley, the MCC Bag Drag bay, and in the Air Services office.

4.3.3 Passenger Priority

The priority for manifesting passengers is established by the NSF with the authority for prioritizing contract personnel delegated to the McMurdo Resident Manager. The general priority assigned to passengers is Urgent MEDEVACs, Distinguished Visitors, personnel resigning or having been terminated, rotating 109th ANG personnel, NSF staff and grantees, NZAP personnel, and contractor employees. Note that passengers bumped from a prior flight do not automatically assume priority on the next available flight. Any

appeals for priority in manifesting must be made to the NSF Representative and/or RPS Resident Manager - NOT to Air Services personnel.

4.4 Airfield Transport

4.4.1 Passenger Transport

No passenger may obtain his/her own ride to or from the airfield with the exception of Distinguished Visitors and NZAP personnel who are typically escorted by their respective hosts. Distinguished Visitor and all other passenger movements will be coordinated with Air Services to ensure that the manifest and arrival times at the airfield are correct. All passengers must be wearing the required ECW gear when they report for transport at the MCC. At the airfield, passengers must remain in the passenger terminal or in the vicinity of the air services vehicles. Under no circumstances should passengers be allowed to walk out onto the ramp or smoke near the aircraft. The Air Services Representative will ensure that passengers are notified of the restricted areas of the airfield. The Air Services Representative (or anyone else at the airfield) shall immediately report any passengers smoking on the ramp to the nearest aircrew member for remedial action. She/he will also notify the Assistant Supervisor, Passenger Operations so that USAP management may take further action, if desired.

4.4.2 Crew Transport

Flight crews should utilize the McMurdo airfield shuttle system, however, they are ultimately responsible for arranging their own transportation to the aircraft. Crew members desiring to ride aboard Air Services vehicles from the airfield following a flight may do so provided there is room and they will not delay the transport of passengers by more than 10 minutes.

4.4.3 Transport Times

In order to arrive at the airfield one hour prior to the scheduled aircraft departure, transport will leave the MCC 1.5 hours prior to take-off from the McMurdo Sea Ice Runway, 2 hours prior to take-off from Williams Field, and 2.5 hours prior to take-off from Pegasus.

4.5 Mission Essential Ground Personnel

MEGP, in accordance with (IAW) AFPD 10-21, are eligible support personnel performing unique duties directly associated with and essential to a particular mobility aircraft, aircrew, or mission. Mobility support duties include Chaplain Service Teams, Command Chief Master Sergeants, maintenance personnel (including recovery teams), TALCE, security forces, combat camera, safety, unit intelligence personnel, command and control flight program personnel, and Public Affairs (PA) media escorts per Regulation AMCI 11-208). MEGP must be manifested on all USAP flights. The 109th First Sergeant is responsible for providing a list of any MEGP to Air Services when they

submit the crew manifest. When traveling aboard USAP aircraft, MEGP will be manifested as crew and therefore do not bag drag or transport with the passengers. As crewmembers, they provide their own flight lunches and survival bags i.e. green bags need not be manifested.

4.6 Flight Lunches

Air Services personnel should place orders for flight lunches no later than 2200 the evening prior to the flight. They should be picked up an hour prior to the first mission of the day and stored in the designated refrigerator in the MCC cargo bay. Flight lunches will be distributed to passengers as they board the aircraft. 109th personnel will provide flight lunches for all individuals manifested as crew for a flight. Flight lunches are only available on flights originating from McMurdo and will not be provided by the South Pole Station or any field camp.

4.7 Passenger Boarding/Disembarking

4.7.1 Required Briefing

A safety briefing will be conducted by an aircraft crewmember (Loadmaster) prior to boarding the aircraft. This may occur in the passenger terminal for large numbers of passengers or on the air services vehicles just prior to boarding. The USAF will have a safety briefing video available, however, the ability to show this video will be contingent upon limited personnel and equipment availability at the runways, aircraft, and MCC. An Air Services Representative will board the aircraft to give the following brief and meet passengers arriving in McMurdo before the Loadmaster allows anyone to disembark (see Section 4.7.3).

Welcome to McMurdo.
I'm _____, your Air Service Representative.

Once you've disembarked the aircraft, please proceed directly to the shuttle vehicles.

Please do not stop to take pictures and refrain from smoking until we get into town.

All RPSC, NSF, and grantees will report to building 155 or the Chalet for an arrival brief and billeting assignments.

All military personnel please report to the lounge in building 206.

You may pick-up your baggage in two hours up at MCC, Bldg. 140. There may be a driver available to help you transport your bags to your dorm.

You may want to place your hand-carry bag in your left hand in order to hold onto the rail when disembarking the aircraft (C-141).

4.7.2 Aircraft Seating

The aircraft Loadmaster will direct passengers to an appropriate seat, ensure their seat belt is properly fastened, and that any carry-on baggage is stowed beneath their seat. On occasion, the Loadmaster may ask that all/excess baggage be stowed and strapped down centerline in the cabin. On C-141 and C-17 aircraft, female passengers are typically boarded last so as to be seated at the front of the aircraft thereby facilitating access to the lavatory. On C-130 flights with near capacity passenger loads, females may be seated towards the rear of the aircraft to accomplish the same purpose. This concern is not relevant on C-5 aircraft.

4.7.3 Movement Control

Upon arriving at the airfield, Air Services personnel should contact Skier Maintenance by radio to inform them that passengers are ready for briefing. Passengers must remain in the passenger terminal or in the vicinity of the air services vehicles so that they may be easily recalled for boarding. Skier Maintenance will ensure that the ATO MC1 and Air Services Representative transporting passengers are promptly notified to proceed to the assigned aircraft upon arrival at the runway. At the aircraft, passengers should not be released from the vehicles until signaled by the Loadmaster that the crew is ready to receive. Typically, for large flights, passengers are released and loaded five at a time. When boarding, it is the responsibility of the Air Services Representative to ensure that passengers do not walk across the ramp, smoke on the ramp or wander around the aircraft. Skier Maintenance is required to double-check with the Aircraft Commander, MC1, and Air Services Representative to ensure that all manifested passengers are verified as being aboard the aircraft before departure to ensure that nobody is left behind. For arriving flights, Loadmasters must not release passengers from the aircraft until an Air Services Representative has boarded the aircraft, briefed the passengers, and is ready to receive them for transport. At the South Pole Station prior to passengers disembarking, cones will be set up and a crewmember stationed to direct movement from the aircraft access door to a point off the ramp.

4.8 Survival Bags

For air transport of passengers in Antarctica, there are legal requirements relative to survival gear that must be contained in the aircraft. Green Bags must be manifested for all missions and are intended for use on land in the event of an aircraft mishap. As a rule, there must be a green bag for every two passengers on board. Each green bag weighs 35 pounds and will be manifested as loose load. Loadmasters on flights picking up passengers at South Pole or the field camps must ensure that passengers boarded do not exceed the number of survival bags available. 109^{th} personnel, whether they are passengers or crew, travel with individual survival equipment and therefore are not counted when determining the required number of green bags.

4.9 Late Passengers; Missed Flights

The following action will be taken for personnel not arriving on time for transport. Air Services personnel will call the individual's room or page them if a pager is available. If unsuccessful, they will contact the individual's supervisor, the 109th First Sergeant, Principal Investigator or Scott Base manager, depending on agency. Transport will leave for the airfield in time to arrive one hour prior to scheduled aircraft departure. At that point the individual has missed the flight. The MC1 on duty or the Air Service Representative will notify the Loadmaster and appropriate changes to the manifest will be made. If they then present themselves to MCC it may be possible to arrange special transport or utilize the airfield shuttle in order to make the flight, however, under no circumstances should the individual take the shuttle or use their own transport without coordinating with the MCC. If a flight departs without a manifested passenger, that individual will be required to meet with the NSF representative or Resident Manager before they may manifested on another flight (see Section 4.1 for missing/late military personnel procedures). If a person does not show up for a flight, his/her passenger bags will be downloaded per AFI 11-2C-130.

4.10 Crew Tours

4.10.1 McMurdo Station

Tours of McMurdo station are provided for USAF Air Mobility Command crews participating in Operation Deep Freeze flights. ATO will be the sole provider of crew tours and will provide a vehicle (size to be determined based on crew size), a driver, and a tour guide. Tours will be conducted within the ground time required to complete cargo, passenger, and fueling operations. Aircraft ground time is not to be extended to accommodate crew tours. Tours will not be conducted for WINFLY, the first flight of Mainbody deployment and redeployment flights out of Pegasus Airfield. USAF crews and support personnel will receive a souvenir USAP patch. Patches will be given to the Commander, Operation Deep Freeze for distribution.

4.10.2 South Pole Station

Organized tours of South Pole Station for Air National Guard crews are typically not provided, however, short visits to the ceremonial and geographic South Poles are permitted for aircrew personnel not involved in cargo or fueling operations. Visits to the ceremonial South Pole will be conducted within the ground time required to complete passenger, cargo, and fueling operations. Aircraft ground time is not to be extended to accommodate these visits. Visits to the ceremonial and geographic South Poles are at the discretion of the Aircraft Commander and may be terminated by the NSF Representative at any time. Aircrew personnel should not enter the Dome or any South Pole Station structure, nor borrow snow machines for excursions away from the aircraft.

4.11 Distinguished Visitor Flights

4.11.1 Transport

Distinguished Visitors are not required to bag drag. Default weights will be entered and their luggage will accompany them to the airfield and be loaded when they board the aircraft. MCC will provide special transport for Distinguished Visitors or they may be transported by their host agency under prior arrangement with ATO Passenger Services.

4.11.2 Seating

Distinguished Visitors will generally be last to board the aircraft and will normally be seated at the front of the cabin. Mission and cargo considerations, however, may dictate other seating assignments. The seating arrangements of Distinguished Visitors on the flight deck are at the discretion of the Aircraft Commander.

4.11.3 Ground Time at South Pole Station

Day trips by Distinguished Visitors to South Pole Station will generally be scheduled to allow a minimum of 2 hours, and preferably 4 hours, of time on station at the pole. This is typically accomplished by manifesting them south on the first flight of the day and north on a flight separated by the desired amount of time. On occasion it may be necessary to hold a flight on the ground at the South Pole to accommodate a Distinguished Visitor, however, this requires the specific approval of the NSF Representative.

5.0 Special Cargo

5.1 Ice Core Standard Operating Procedure

5.1.1 Purpose

The ice core standard operating procedure prescribes specific courses of action to be followed in the handling and shipping of ice cores from the field to their final destination. It is intended to meet the needs of all parties involved with the shipping and handling of ice cores. The importance of properly transporting, handling, and delivering ice cores cannot be overemphasized due to the high cost and extensive effort required to obtain these cores for scientific research.

5.1.2 Scope

The procedures prescribe in detail how the ice cores will be handled and shipped with a focus on the safety and security of the cores. The procedure represents what is actually practiced and generally proven to safeguard the ice cores from origin to destination. The detailed description of the practiced procedures, however, provides the basis for continually auditing the process. It is expected the process will be audited to assess its effectiveness and compliance.

5.1.3 Responsibilities

The Supervisor, USAP Cargo, will maintain this ice core standard operating procedure and notify the ATO Manager of any required revisions. RPSC, in collaboration with the National Ice Core Laboratory (NICL), grantees, and other interested S-Groups, is responsible for developing and maintaining these procedures. Since it is a jointly developed procedure, changes will be coordinated within RPSC and with the NICL, at a minimum.
The Supervisor, USAP Cargo is responsible to ensure all support necessary is provided for ice core handling. ***Only Urgent MEDEVAC flights will have priority over the handling of ice cores.***

5.1.4 Procedure

Pre-season Planning. Grantee institutions must commit to receiving the ice core shipment within 7-10 days of arrival at Port Hueneme. This will minimize en route time until the ice cores reach their destinations and more suitable ice core storage facilities. For planning purposes, Grantee institutions should be prepared to receive ice cores no later than the third week of March.

Pre-Field Preparations. Marking, labeling, and documenting ice cores for retrograde from Antarctica is the responsibility of the Grantee. The USAP Cargo staff will provide final destination labels and other marking materials. A generic weight of 150 lbs. and 11 Cube will be entered into CTS. Once this is complete, USAP Cargo will generate two bar code labels for each ice core box. These are affixed with adhesive AND stapled to the boxes. Because of the difficulty of working in the freezers, grantees are required to prepare retrograde labeling, etc. on the boxes BEFORE the empty ice core boxes go out to the field. In the case of large field camps with many ice core boxes, retrograde information (totals, estimated weights) can be passed by radio (and perhaps by e-mail) to USAP Cargo. The TCNs will be stenciled on both ends and the top for ease of reading.

Since the ice cores going to the NICL represent approximately 90% of the shipments, only the NICL destination ice cores will be specifically distinguished. A label provided by USAP Cargo will be placed on the NICL ice core boxes. The label will facilitate and expedite sorting prior to shipment.

Field Preparation of Ice Core Shipment. Grantees will mark their ice core boxes with transportation control numbers and designate the final destination of each of the ice core boxes while in the field as described above in the "Pre-Field Preparations" section.

Data loggers will be tested in the –15C to –20C range before employment to ascertain their variability and the test results will be recorded to facilitate accurate analysis of temperature recordings. Ice core boxes containing data loggers will be marked or distinguished from those without loggers. The eight corners of ice core boxes containing data loggers will be painted **RED**. Data logger times will be set to Greenwich Mean Time. Multiple ice cores of the same period or record may be placed in separate ice core

boxes to guard against the loss of a portion of the record in the event ice cores are damaged beyond use in a particular box.

Grantees will provide the Supervisor, USAP Cargo with a priority list, by TCN, of which cores to save first in the event of a catastrophic loss of power or cold storage. This priority list will be passed to the transporters for their use in the event there is a problem enroute. Transporters include the Master of the resupply vessel at McMurdo, Manager, Port Hueneme Operations, and drivers delivering ice core to the NICL.

Any ice core that does not have to remain below minus 15ºC will be so identified on the ice core box and in CTS. Additionally, Grantees will advise the Supervisor, USAP Cargo of the TCNs that do not require minus 15ºC or below temperatures. The CTS shipping record will be annotated with the temperature restriction. Without notification of an exception, all ice cores will be handled and shipped at temperatures below minus 15ºC.

From the field to McMurdo. Grantee or field camp personnel make radio contact with the McMurdo Fixed-Wing Operations Coordinator advising of when ice cores need to be transported. Exact number of ice core boxes and pallets need to be detailed ("two pallets, one pallet with 18 boxes, one pallet with 24 boxes"). Grantee or field camp personnel contact the USAP Cargo Supervisor by radio with any specific instructions on handling or storage of ice cores. The specific number of ice core boxes and pallets can be given at this time if that information was not yet available when contacting the Fixed-Wing Operations Coordinator to arrange pick-up. Radio communications is the preferred and primary means for passing shipment information. This information can then be entered into CTS and bar code labels sent out to the field for application prior to the ice cores returning to McMurdo. The USAP Cargo Supervisor contacts the CSEC Lab Supervisor or Asst. Lab Supervisor and lets them know when to expect the ice cores and double-checks which freezer(s) is to be used for storage of the ice core shipment. The Lab Supervisor or Asst. Lab Supervisor then double-checks that the freezer to be used is ready to receive ice cores. The freezer is clean, free of obstacles, and holding -22C temperature. Hallways and loading docks leading to the freezer will also be checked to ensure that they are free of obstacles.

Late evening flights from McMurdo are preferred because these results in early morning return to McMurdo and are less disruptive to the daily work routine. As deemed necessary by the Science Groups, a Field Camp Technical Escort may accompany the ice core shipment to McMurdo with temperature measuring devices such as data loggers. If the aircraft cabin temperature is too warm for the shipment, the technical escort is expected to notify the aircraft commander so the temperature can be lowered to an acceptable range. As alternative to sending a technical escort, a data logger will be affixed to an ice core box to measure the aircraft cabin temperature. The data logger will be removed by USAP Cargo and returned to the field camp where it will be read. Data logger measurements will be used to feedback temperature maintenance performance to the aircraft commander via their squadrons and the Supervisor, USAP Cargo.

LC-130 aircraft travel as a "cold deck" when returning to McMurdo with ice cores aboard. The aircrew will maintain the aircraft cabin at the coldest temperature possible to prevent sample damage. Ice cores are loaded onto the plane on their own pallets, NOT mixed on pallets with any other cargo. If other pallets of cargo are to be loaded, they are loaded first so the ice cores are the first things off the aircraft when landing in McMurdo. For the purpose of ensuring proper aircraft center of balance for takeoff, the Loadmaster, may load the ice cores at other locations, priority will be given to ice cores upon arrival at McMurdo. **Never transport Do-Not-Freeze cargo with ice core shipments (see Section 5.3).**

NOTE: Empty ice core boxes should be clearly marked "EMPTY" when being retrograded from the field camp to McMurdo, especially when palletized with other general cargo. This will prevent false alarms that cause pallets of general cargo to be unnecessarily expedited directly to freezer facilities. Placing the empty ice core boxes as the top layer of the ice core pallets is preferred to shipping them with other general cargo because every ice core box is considered full unless marked otherwise.

The USAP Cargo Supervisor arranges for a dedicated flatbed truck or cargo Delta and a driver to be at the airstrip to transport the ice core back to town. The USAP Cargo Supervisor personally meets the ice core shipment at the airstrip, to ensure that a forklift and operator are ready to unload the plane as soon as the clearance is given.

When the plane lands, the Load Planner at MCC will contact weather and get the temperature at the landing field for recording in the USAP Cargo Supervisor log. The pallets of ice cores are offloaded and transferred directly to their dedicated truck or Delta. Ice core shipments are given number one priority over all other cargo activities on the airfield except emergent MEDEVAC's. The USAP Cargo Supervisor will note in a logbook the time and temp when the ice cores came off the plane. The pallets are immediately tied down to the vehicle. Pallets that do not contain ice cores are not loaded onto the dedicated ice core vehicle despite the availability of space to do so. The vehicle departs the airstrip as soon as it is ready to do so (obtaining proper clearances). The USAP Cargo Supervisor watches aircraft unloading and vehicle loading and rides back to town in the vehicle transporting the ice cores. Thus, the ice cores are never out of the sight of the USAP Cargo Supervisor from the time they are unloaded from the LC-130 until the time they are loaded into a freezer in McMurdo.

The USAP Cargo Supervisor notifies the USAP Cargo crew by radio from the vehicle to let them know the estimated time of arrival (ETA) of the cores in town. A previously selected member of the USAP Cargo crew then notifies the Power Plant by phone that the USAP Cargo crew will be working in a particular freezer for an approximate amount of time. The freezer alarms are monitored at the Power Plant so they will understand if a freezer alarm goes off during this time frame. The USAP Cargo crew is then standing by at the appropriate freezer with a forklift ready to download the pallets of ice cores from the vehicle. When necessary, they have also placed rollers on the floor to expedite the loading of the freezers and have cleared any obstacles in hallways or on loading docks.

The pallets of ice cores are taken off the vehicle by a forklift and brought as close to the freezer doors as possible (at a loading dock for CSEC freezers, right up to the doors at Buildings 139 and 145). The core boxes are then manually carried into the freezers. Care is taken not to stack ice core boxes directly in front of the freezer blower. A minimum of six people is required when loading ice cores into freezers so that it can be done quickly and safely.

Upon completion of core transfer into the freezer, the USAP Cargo Supervisor notes the time in a logbook and then notifies the Power Plant and the CSEC Lab Supervisor that the transfer is complete. The logbook record will be started from arrival of the aircraft at the airstrip and continue through delivery at destination.

Storage in McMurdo. While the ice cores are in storage in McMurdo freezers, CSEC personnel monitor the freezers to assure that they maintain the proper temperatures. This includes entering the freezers four times a day (at approximately 6-hour intervals) and signing and annotating the temperature on the temperature log sheet inside the freezer. All freezers that ice cores are stored in are equipped with temperature alarms that are monitored at the Power Plant. Should an alarm sound, the Power Plant watch person calls the trouble desk that immediately dispatches the Duty UT. (the utility mechanic on duty). The Power Plant and Firehouse trouble desk are continually manned 24-hours a day and there is always a Duty UT on call.

The Duty UTs are licensed refrigeration mechanics who are familiar with the McMurdo freezer units. There are spare parts for the freezers on station including spare compressors should they be needed. The freezers are connected to a standby electrical power plant should there be a loss of power in McMurdo.

Should it be necessary to remove ice cores from a freezer due to mechanical problems, the Duty UT will notify the CSEC Lab Supervisor (who has a 24-hour pager). The CSEC Lab Supervisor will then contact the USAP Cargo Supervisor. Both Supervisors will immediately round up workers for the ice core transfer (cargo handlers are available 24-hours a day from USAP Cargo and the Movement Control Center (MCC)). The freezers will hold their temperatures for about an hour after losing power.

The U.S. Coast Guard may store any ice cores it generates at the McMurdo ice core facility upon making the appropriate arrangements with the Supervisor, USAP Cargo.

Note: All ice core movements, emergency or contingency actions or temperature checks will be recorded in the ice core journal.

Retrograde from McMurdo. In mid-January the Electrician Foreman ensures that a panel of electrical outlets--designed for and dedicated to freezer vans has been set up in front of the Chalet. All outlets are checked to ensure they are working and serviceable.

When the resupply vessel arrives (usually around February 1st), freezer vans carrying food are offloaded, emptied, and cleaned as necessary. Some of these freezer vans are

then staged in front of the Chalet by their dedicated electrical panel. The Electrician Foreman plugs them in and then checks that the freezers are in good working order. The USAP Cargo Supervisor checks the freezer vans for internal ice build-up and ensures the doors are in good working order. The USAP Cargo Supervisor borrows a Herman Nelson heater from the MEC if necessary to remove ice build-up. When the freezer vans are free of ice, the USAP Cargo Supervisor turns on the freezer vans and sets the temperature at -22C. The USAP Cargo Supervisor then labels the back of each freezer van (near the temperature display) "Ice Cores - Maintain Temperature at -22C".

When all freezer vans have reached and maintain the -22C temperature for at least a day (24 hrs), the USAP Cargo Supervisor decides when to transfer the ice cores from the McMurdo storage freezers to the freezer vans. This decision is based on availability of manpower, outdoors-ambient temperature, and discussion with Marine Terminal Operations.

The McMurdo freezers are unloaded the same way they were filled. The USAP Cargo crew and helpers (a minimum of twelve people, total) remove the ice cores from the freezers and put them onto a slave pallet being held by the forklift. (The slave pallet is an Air Force pallet with metal mesh on three sides and dunnage affixed underneath, designed to move large amounts of cargo quickly without the danger of cargo falling off the forks.) The ice cores are then forked over to the freezer vans. The ice cores are manually stacked in the freezer vans. The number of cores shipped in each van is dependent upon the van's internal dimensions, the ice core box size, and the space required for airbags or other dunnage. For planning purposes, approximately 64 boxes will fit into a van. The boxes are stacked on top of clean, 48"x48"x48" standard wooden pallets positioned flat on the floor to provide maximum circulation around the boxes. Airbags or other dunnage is placed along the sides of the van as the loading progresses to guarantee adequate airflow around the cargo.

Each box has its bar code label scanned by a bar code tracker as it is loaded into a freezer van (the freezer van number is manually entered into the bar code tracker). The bar code trackers are subsequently downloaded into the Cargo Tracking System (CTS) on a computer at USAP Cargo.

Note: Ice cores with the same destination are consolidated in the same McMurdo freezers and same freezer vans so that there will be less handling and sorting when the freezer vans are unloaded at Port Hueneme, CA. The USAP Cargo Supervisor will provide the Manager, Port Hueneme Operations the number of boxes for each destination before vans are loaded in McMurdo. For freezer vans containing ice cores going to multiple destinations, the Port Hueneme staff will designate which multiple destinations will travel in the same van. This will further eliminate or minimize the need for sorting at Port Hueneme, which also reduces the risk of cargo damage.

When all the ice cores and frozen cargo have been accounted for and loaded into the freezer vans, air bags are placed in the voids (by the doors, etc.) for cushioning during transit. The freezer van doors are closed and sealed (with a breakable seal). The ice core

vans receive a bar code label that includes the seal number. The USAP Cargo Supervisor then notifies Marine Terminal Operations that the freezer vans are ready to be moved to the ice pier for loading aboard the ship.

The Marine Terminal Operations Supervisor (usually the same person as the Terminal Operations Supervisor, Port Hueneme) decides where and when the freezer vans will be loaded on the vessel. When the time comes, the freezer vans are unplugged and loaded on flatbed trucks by forklifts. These trucks proceed immediately to the pier and pull alongside the vessel within reach of the vessel cranes. The freezer vans are then rigged to the crane cables and hoisted onto the vessel. Once the freezer vans are stowed securely, they are plugged in. The First Mate or Captain of the ship then checks that the freezers are running normally and that they reach the -22C temperature again if their temperatures have risen during the transit to the vessel. Temperature checks are done four times daily and the temperature chart recorder wheels are given to Port Hueneme Operations at the end of the voyage when the vessel off-loads the vans. The wheels will become part of the official history of the ice core shipment.

Notification of Ice Volume. Following completion of vessel operations but not later than the third week of February, the Manager, Port Hueneme Operations will advise the NICL of the number of ice core vans to expect.

Receipt at and Shipment from Port Hueneme, CA. Prior to vessel arrival, the Construction Battalion Center (CBC) Port Hueneme reefer plug-ins are given a functional check and arrangements are made to use the freezer warehouse for ice core storage, as required.

The reefer containers are transferred by truck from the vessel to plug-ins near the Construction Battalion Center (CBC) station freezer warehouse. The Manager or Supervisor of Receiving, Port Hueneme Operations, escorts the trucks from the vessel to the plug-ins. The transfer takes 15-20 minutes from the time the reefers are unplugged to the time they are plugged-in on station.

The ice core will remain in their designated reefers until shipment to their destinations, unless additional sorting is required. Ice core sorting will be accomplished in the freezer warehouse where it can be done in an adequately chilled environment with adequate lay-down space. Ice core transfers will be accomplished in the cooler hours of the day; late evening or early morning, to minimize the threat of ices core warming.

Note: The goal is to eliminate en route sorting by accomplishing it at origin. Because of the mix of destinations in a marine container, it may be necessary to further sort ice cores at Port Hueneme.

Ice cores are transferred one pallet at a time and the doors on the freezer and vans are immediately closed on withdrawing or loading the pallet. If the temperature rises above prescribed temperatures, the operation is halted until the temperature decreases to acceptable limits. Individual box exposure to ambient temperature during transfer will

not exceed 10 minutes or the limits of the temperature guide for the existing weather conditions.

Port Hueneme will schedule transportation for delivery of the containers throughout CONUS. This includes contacting all Grantees to ensure they are ready to receive the shipments. Scheduling will also include interviewing drivers to ensure reliable drivers are provided, briefing drivers on actions to take in the event of an emergency such as loss of reefer temperature, and testing reefer trailer functioning. Additional trucks and reefer trailers will be required to follow shipments as a contingency to loaded reefer container failure. In the absence of material handling equipment, trucks can be positioned trailer opening to trailer opening to facilitate cargo transfer. Port Hueneme Operations will ensure that a pallet jack and a metal plate are included with each shipment. The metal plate will serve as a bridge between the two trailers to enable pallets to be moved from one truck to the other by pallet jack. Trucks report their position twice daily to Port Hueneme Operations and provide proof of delivery after the cargo reaches its destination. These reports will be entered into the Port Hueneme Operations Ice Core Journal.

Ice Core Delivery at Ultimate Destination. Grantee institutions will be prepared to receive ice cores on arrival. Grantees are responsible for identifying any special needs required to receive ice cores from the transporter. Time of receipt and condition of ice cores will be reported to the Port Hueneme Staff and the Port Hueneme Staff will enter the information into their ice core logbook to complete the record of shipment.

A complete ice core logbook with each party's portion will be on file with the Curator, NICL. Port Hueneme Operations will provide a copy of their portion of the logbook and the reefer container temperature wheels to the Supervisor, USAP Cargo.

NSF Provided Data Loggers. NSF owned data loggers are controlled and managed by the Supervisor, USAP Cargo. The loggers will be managed as a pool asset and will be employed based on an annual seasonal plan designed to adequately monitor the season's ice cores. The seasonal plan will be developed jointly with the S-groups collecting ice cores with specific numbers allocated to each group's need before start of the season.

Loggers will be placed in ice core boxes and remain there until they reach their destinations. After receiving their ice cores, Grantees will send the loggers to NICL where the data will be downloaded. The NICL will distribute electronic and/or paper copies of the data to all S-groups. Once the data has been removed, the loggers will be sent to the Supervisor, USAP Cargo at RPSC, 61 Inverness Avenue East, Suite 300, Englewood, CO 80112. RPSC will ship the loggers to McMurdo to support the next Austral Summer season.

Ice Core Temperature Data Analysis. Electronic and paper copies of the Data logger temperature records will also be provided to the Supervisor, USAP Cargo. After the loggers have been downloaded, the data will be analyzed to identify unacceptable or questionable temperature variances and will be compared to shipping and handling logs to evaluate the effectiveness of the ice core shipping and handling process.

Ice Core Box Exposure Limits. Preliminary test results indicate that ice core boxes should not be exposed to an ambient temperature of 80ºF for longer than 1.5 hours to preserve an inside temperature of minus 15º C or lower. Keeping boxes near 32ºF is effective in preserving minus 15º C.

Ice Core Journal. Grantees, the Supervisor, USAP Cargo, the Manager, Port Hueneme Operations and the NICL will maintain a journal to record the handling and shipping of ice cores. The journal will establish accountability for action or inaction, provide the basis to reconstruct temperature influences on ice cores and to document where ice core boxes are in storage, i.e., and exact location. The journal will be used to create an official record. Significant events and/or events impacting the safety, security or history of influences on ice cores will be documented. Specifically the following events or activities will become part of the official ice core record:

- All Ice core movements will be recorded and will include beginning and ending time and date, ambient temperatures and weather conditions, and any significant event that could affect or threaten the security and safety of the ice cores.
- All temperature recordings taken while the ice cores are in cold storage and who took them. Where possible and available, the cold storage unit temperature chart records should be provided because it is the best possible record of temperature changes.
- Driver position reports while in transit between Port Hueneme and the NICL.
- The temperature chart records for each ice core freezer van shipped on the annual resupply vessel.

A copy of all journal documents will be forwarded to the Curator, NICL at Denver where a central repository will be maintained. (To be discussed with the NICL curator).

Ice Core Box Van Storage Map. The location of each ice core box in the freezer van will be mapped as the van is being loaded in McMurdo. A three dimensional matrix will be used to depict where each box is located. The three dimensions are block, tier and column. Ice core boxes are stored in the vans with their ends facing the opening so the TCN on the end can be easily read. Typically, ice core boxes are stored four across and four high, lengthwise back to front. Each four by four group constitutes a block. Vans can typically store four blocks of ice core boxes. Since vans are stored from back to front, the further most block will be designated “1” as depicted in the matrix below and the next block closer to the opening will be Block “2”. Columns will be designated from left to right starting with the letter “A.” Tiers or rows will be numbered from bottom to top beginning with Row “1” on the bottom. To illustrate this addressing scheme, an ice core with the location “1A1” is positioned in the far left-hand corner of the freezer van on the floor. Ice core boxes are 18 inches by 20 inches by 50 inches.

Whenever possible, A minimum of nine Ice core boxes with data loggers will be strategically positioned in the reefer van. The strategic locations are each corner of the van both top and bottom and the geographic center of the van. The matrix positions of

the loggers would be 1A1, 1A4, 1D1, 1D4, 4A1, 4A4, 4D1, 4D4, and 2C2 (the geographic center position):

BLOCK	TIER	COLUMN A	COLUMN B	COLUMN C	COLUMN D
1	**4**	4A	4B	4C	4D
1	**3**	3A	3B	3C	3D
1	**2**	2A	2B	2C	2D
1	**1**	1A	1B	1C	1D
2	**4**	4A	4B	4C	4D
2	**3**	3A	3B	3C	3D
2	**2**	2A	2B	2C	2D
2	**1**	1A	1B	1C	1D
...	**...**	**...**	**...**	**...**	**...**
...	**...**	**...**	**...**	**...**	**...**
4	**1**	1A	1B	1C	1D

Central Point of Contact. The Supervisor, USAP Cargo will be the collection point for process improvement recommendations and for registering concerns with the shipping and handling of ice cores. In Denver, the Supervisor, USAP Cargo telephone number is 1-800-688-8606 Ext. 3159 and the ATO Manager's number is Ext. 3930.

5.2 Hazardous Cargo

Hazardous materials will be prepared (packaged, labeled, marked, documented) for shipment by the Hazardous Cargo Specialist and other ATO cargo staff who have the proper training. No untrained personnel will prepare hazardous cargo shipments. Hazardous cargo that will travel by military aircraft will be prepared in accordance with Air Force Joint Manual 24-204. Hazardous cargo that will travel by vessel will be prepared according to the International Maritime Dangerous Goods Code (IMDG) and 49 CFR. Hazardous cargo that will travel by USAP contracted civilian aircraft in Antarctica will be prepared according to the USAP Airlift of Hazardous Materials Manual. When it is anticipated that retrograde hazardous cargo will be transported on commercial aircraft from New Zealand, the cargo should be prepared within the packaging and quantity limitations of the IATA Dangerous Goods Regulations so that no repackaging is necessary in Christchurch, NZ.

The Hazardous Cargo Specialist is the "preparer" of McMurdo hazardous material as defined in AFJMAN 24-204 and has the responsibility for packaging hazardous material and for preparing all required certifications, deviations, and waivers. The Hazardous Cargo Specialist also provides HAZMAT training and applies his/her expertise to resolve any HAZMAT issues. The Commander, Operation Deep Freeze is the nominal approval authority for all waivers and deviations. On the ice, ATO is the "originating activity" for all hazardous material regardless of which agency owns the material in question. When

hazardous material is being retrograded from the South Pole or the inland field camps, the USAP Cargo Coordinator and Fixed Wing Coordinator, respectively, should be notified by radio, who, in turn, informs the USAP Cargo Supervisor of the incoming material. If situations exist where a significant amount of hazardous material is to be retrograded from a field camp, the ATO Hazardous Cargo Specialist can be sent to the field camp to assist in preparing the material for shipment.

5.2.1 Transport of JATO Equipment

The term "Misfire" is one of many conditions that render a JATO (Jet-Assisted Take Off) asset (bottle or igniter) unserviceable. This term has caused some concerns for the USAP transportation community. For future reference, please identify and label these assets as described by USAF regulations: *Serviceable, Unserviceable, and Spent*. They should be classified, packaged, labeled, and transported following the appropriate 49 Code of Federal Regulations, AFJMAN 24-204, and the Antarctic Treaty.

Contact the ATO Hazardous Cargo Specialist for additional information regarding the packaging, labeling, permitting, and transport of JATO assets.

Note: the U.S. Navy term “JATO” will be utilized in the USAP Air Transportation Protocol instead of the U.S. Air Force “ATO” acronym to avoid confusion with the Antarctic Terminal Operations Department (also called ATO).

5.3 Do Not Freeze

"Do Not Freeze" cargo should be labeled appropriately and the box should be black or all corners of the box should be marked in black. On any particular flight, "Do Not Freeze" cargo should be consolidated on one pallet. Pallets of "Do Not Freeze" material transported southbound during WINFLY should not be built higher than 80" so that they may fit inside a storage trailer used to transport the DNF material from the Pegasus Ice Runway to McMurdo. No more than two DNF pallets should be transported on a single flight during this time frame. It is preferred that not more than one pallet of DNF be sent to South Pole Station per flight. Additionally, not more than three pallets of DNF per flight should be sent to McMurdo at Pegasus Airfield during the Mainbody season. Airfield cargo handlers and aircraft Loadmasters must take care to ensure loose load DNF items are not left standing in the snow while waiting for loading or pickup. DNF cargo should never travel on aircraft maintaining a "cold deck", such as during ice core transport operations (see Section 5.1.4). Other special cargo handling codes are given in Section 9.6.2.

5.4 Hand-Carry Items and Cruise Boxes

The USAF APO postal system is the only approved method for delivery of personal packages to Antarctica; however, personnel may ask aircrews to deliver personal packages to the ice. Do NOT accept personal packages, as it causes discontent within the McMurdo community when individuals or groups are seen receiving "special delivery"

items from New Zealand. Also be aware that NSF has authorized New Zealand Customs to perform drug interdiction activities for all mail and southbound cargo shipments to Antarctica. Transportation of personal parcels by aircraft circumvents these systems and could be seen as a potential route for contraband shipments to the ice.

On occasion, hand carry items will be given to specific passengers to deliver to personnel in McMurdo, Christchurch, or Denver. These items are official corporate correspondence and are logged and accounted for by ATO. These items are not generally handed to aircrew personnel to deliver.

The Cruise Box is used, more or less, like Guard Mail specifically for on-continent field camps. It is a plastic or metal box in which last minute mail and small cargo items can be easily manifested for a flight. Cruise Boxes are manifested as loose load with a default weight of 100 pounds. Hazardous cargo will never be sent in a Cruise Box.

5.5 Medevac Procedures

5.5.1 Overview

These procedures have been developed to ensure that (1) medical personnel understand the purpose and need of medical evacuations and use the MEDEVAC system appropriately; (2) resources are efficiently coordinated to facilitate a MEDEVAC; (3) and that all affected agencies and groups are appropriately contacted and kept informed.

A medical evacuation is appropriate when USAP medical capabilities cannot provide the care, treatment, or diagnosis that a patient may need to sustain his/her life or health. A medical evacuation should not be used to facilitate elective or non-essential medical care, treatment, or diagnosis.

The term medical evacuation is applied to three categories of urgency: Urgent, Priority, and Routine. The classification is driven by the urgency in which the patient needs to be transported to more comprehensive medical care, which is determined by the patient's condition.

Although transport of a non-urgent patient does not truly represent an "evacuation", a single "MEDEVAC" procedure and system has been developed for ease of administration. It is important to understand that each category carries with it varying degrees of response and resource commitment. For that reason it is essential that the term "MEDEVAC" NOT be used without the categorical qualifier.

5.5.2 Scope

These procedures address the transportation and medical care that arise when, (a) patients from South Pole or remote field camps are transported to McMurdo Station for further medical evaluation, treatment and/or who require further transportation to New Zealand for further care. Or, (b) when patients who originate in McMurdo and are being sent to New Zealand for further evaluation or treatment or those who require transportation to

the United States. Specific Search and Rescue (SAR) operational and response procedures are not contained within this procedure but are maintained by the SAR team.

5.5.3 Coordination

In the process of a MEDEVAC there are three levels of coordination that need to take place:

The first level of coordination is intended to identify and mobilize air transportation commensurate with the category of MEDEVAC. The RPSC Area Manager, Asst. Area Manager or Remote Site Manager (hence forth referred to as "RPSC Manager) does this level of coordination.

The second level of coordination is intended to transport and care for the patient. Designated RPSC medical personnel perform this level of coordination.

The third level of coordination is intended to ensure at all appropriate administrative procedures pertaining to patient employment status, insurance/workers compensation, NZ housing, ticketing for return to US, etc are activated. The RPSC Manager performs this coordination.

5.5.4 Determination of the Need for a MEDEVAC

From Remote Locations:

Radio notification of obvious or potential need of MEDEVAC will be originated by the station or camp to McMurdo and patched through to Medical to provide medical personnel with details of the patient. Although the radio and patched communication is not necessarily via secured means, those involved in the communication are authorized to discuss otherwise patient confidential information as is required to facilitate appropriate measures of care. This communication can precede, be coincident with, or come after notification of the Search and Rescue (SAR) team - depending on the urgency of the particular situation.

At South Pole and field camps having medical providers the determination to proclaim a MEDEVAC, and to establish the category of MEDEVAC, will be made by the McMurdo physician in consultation with the attending medical care provider.

NOTE: There is no need to classify a person being transported to McMurdo for routine, non-urgent but unplanned medical or dental care as a MEDEVAC. A routine call to the clinic may be appropriate to establish an appointment.

Within the McMurdo Response Community:

The RPSC McMurdo Clinic physician will determine the need and category of MEDEVAC in consultation with Air National Guard Flight Surgeon(s). When the determination is in dispute the opinion of the RPSC physician will prevail.

5.5.5 Initial Notification: Medical to Resident Manager

Once it has been determined that a MEDEVAC is needed, the RPSC medical designee will telephone the RPSC Manager and provide the following information:

1. Patient Name
2. Patient Organization
3. Category of Patient (see definitions below)
4. Name of Escort if Established (see definitions and discussion below)
5. If urgent – When will the Patient be Ready for Transport (e.g. Patient is ready for transport pending aircraft availability; patient will be ready for transport in XX hours). NOTE: In the best of conditions it may take up to 2 to 3 hours for an aircraft to be prepared (i.e. configured for a littered patient, fueled, flight crew organized). During that time USAP operators will attempt to identify and muster personnel scheduled for redeployment and get them on the aircraft. If additional time can be allotted for this to occur WITHOUT jeopardizing patient care, so indicate. Conversely, if the nature of the injury or illness is such that it would be ill advised to allow routine passengers, so advise.

The RPSC Manager will contact the following:

NSF Representative (if urgent, the NSF Representative will authorize diversion of aircraft, helicopter or other USAP assets)

Commander, Operation DEEP FREEZE (CODF) – (will coordinate aircraft availability and schedule with Raven Ops and Air Ops.

NSF Station Manager (will coordinate other USAP assets as required).

Manager, NZ Operations (will coordinate aircraft movement if other than McMurdo aircraft are used)

5.5.6 Electronic Notification

At some point into the MEDEVAC evolution RPSC Medical will send out a standard format electronic message to the "MEDEVAC - Mailing List" listed on the McMurdo LAN email address list. This list comprises those individuals that have a role in the preparation, transportation, care, and management of the patient. Individuals representing the Firehouse (for ambulance service), Human Resources and Military commands (to administer appropriate transportation, insurance/workers compensation, employment status procedures), Air Operations coordinators (for transportation arrangements, crew notification, aircraft divert), Movement Control Center. (For

transport of medical supplies, notification of space requirements, and configuration on-board the aircraft, etc.). Representatives of ANG and RPSC in Christchurch (for medical consultation, local ambulance service, etc.), RPSC Health Services Manager, RPSC Medical Director, RPSC Safety (for possible accident investigation and reporting) RPSC and NSF station management (for facilitation of MEDEVAC, notification of NSF and RPSC HQ, notification of family members, etc.)

NOTE: This mailing list should be established by the RPSC Manager and RPSC Medical in coordination with RPSC Information Systems at the beginning of each austral summer. This message has been designed to exclude any information that would normally be considered medically confidential. For that reason any additional people that have a reasonable need to know can be added to the "MEDEVAC List" address at the discretion of the RPSC Manager.

The electronic MEDEVAC message will be formatted in the following standard format:

MEDEVAC Number:
Patient Name:
Organization:
Category:
Condition:
Status:
Attendant:
ICD 9 Code:
From/To:
Disposition:
NZ Ambulance Requirements:

The message will contain this information using the following conventions:

MEDEVAC Number - a sequential number beginning at WINFLY for each operational season. Should a MEDEVAC originate at South Pole or other location served by McMurdo Medical, the MEDEVAC number will be followed by the letter "A". If the patient is MEDEVAC'd to McMurdo and subsequently sent to NZ, the MEDEVAC number would remain as originally assigned but should be followed by a "B".

Patient Name: Last name, First Name of Patient

Organization: The organization (see listings in the Patient Tracking Database) or science number to whom the patient is assigned. Similarly, indicate national Antarctic program affiliations where appropriate (e.g. NZ Antarctic Program, Italian Program, etc). Indicate "Civilian" for Non-national program personnel such as tourists).

Category: Patient is classified in one of the following three response driving categories, which prompts the corresponding actions:

Urgent: Patient condition requires diversion of appropriate assets - including aircraft - to provide appropriate care. Urgent MEDEVAC's will typically require attending medical care during transportation. Transportation to New Zealand is required *as soon as possible.* Transportation of in-bound MEDEVAC's to McMurdo Clinic and to awaiting northbound craft *will require ambulance service.*

NOTE: Urgent MEDEVAC flights will have the highest priority. All other services and assets will be made available immediately upon request.

Priority: Specific arrangements will be made on a case-by-case basis as determined by physician in coordination with other responders depending on the specific incident. Generally, the patient condition will not require aircraft divert but does require transport on next available flight to New Zealand. Urgent MEDEVAC's may require attending medical care during transportation. Transportation to New Zealand *is required within 24 hours.* Transportation of inbound MEDEVAC to McMurdo Clinic and to awaiting northbound aircraft *will require ambulance service.*

Routine: The patient condition does not warrant any special transportation arrangements from McMurdo to New Zealand. Transportation will be made on a *next-available space basis.* Generally, these patients are being sent to New Zealand for non-emergency diagnostic testing or treatment that exceeds medical capabilities in McMurdo. Non-urgent MEDEVAC's will not require attending medical care during transportation to New Zealand. *Ambulance service is not required* to transport the inbound MEDEVAC to McMurdo Clinic nor to northbound aircraft. Non-urgent patients will be considered a normal northbound passenger with regards to processing.

Condition: Patient is classified as to his/her medical status ranging from stable too critical.

Status: The patient is classified relative to his/her ability to be transported varying from ambulatory (i.e. able to walk under his/her own power, with or without assistance) to litter - indicating patient will be transported in a litter.

Attendant: This indicates the level of attendance that the patient will require during the MEDEVAC varying from no attendant required to specification of medical team members in attendance described by position and name if known at the time of message generation. NOTE: Generally, the attendant will be from RPSC's medical staff and not ANG staff UNLESS the skills of the ANG staff are the best suited to tend to the needs of the patient or the medevac coincides with the normally scheduled redeployment of the ANG staff. IF THE ANG Flight Surgeon is the most appropriate to serve as attendant, the RPSC Manager must be notified so that the Commander, Operation Deep Freeze (CODF) can prepare the necessary orders.

ICD 9 Code: References the International Classification of Diseases corresponding to the particular patient condition.

From: Indicates the location of the patient at the time of the MEDEVAC.

To: Describes the initial destination of the patient (e.g. if the patient were being sent to McMurdo for additional diagnosis and treatment, McMurdo would be the initial destination although eventual transport to New Zealand may be required).

Disposition: Describes the desired or anticipated course of action to be taken with regards to patient care (e.g. admit to Christchurch Public Hospital; evaluation in McMurdo, etc.)

NZ Ambulance Requirements:

Appropriate status code as defined in the chart below. The operator in NZ provides (this chart).

	STATUS ZERO	**STATUS ONE**	**STATUS TWO**	**STATUS THREE**	**STATUS FOUR**
Patient Condition	Deceased	Critical Extreme	Serious Moderate	Moderate	Minor
Stability		Unstable	Unstable	Stable	Stable
Potential to Deteriorate		Obvious	Probable	Unlikely	None
Special Criteria		Under CPR GCS<9, shock Hemorrhage Assts Resps	Not Under CPR GCS<9		

5.5.7 Ongoing Notification: Medical to Facilitating Organizations

As the MEDEVAC unfolds, a variety of facilitating activities must be coordinated by Medical:

Air Ops: Will provide status and availability of aircraft. To be notified when patient transport has commenced. Air Ops will communicate with the aircrew – RPSC Medical is not to communicate directly with the aircrew.

MCC: Will properly manifest patient and attendant. The need to transport medical and personal gear other than by ambulance should be communicated and a time frame supplied for such said movement

.

Fire House: The timing, configuration, and additional attendants, if needed should be coordinated with the Firehouse.

RPSC Manager: Provide relevant updates or changes in status of the MEDEVAC. Notify RPSC Manager when patient transport has commenced.

5.5.8 NZ Medical Care Notification: Medical to the RPSC Medical Coordinator in Christchurch

The RPSC physician will call the RPSC Medical Coordinator or alternate in Christchurch to discuss appropriate course of treatment and patient disposition will be made by the RPSC Physician.

5.5.9 RPSC Administration Notification

The RPSC Manager will ensure that all appropriate information has been communicated to the RPSC Human Resources representative in McMurdo. This information is essential for change in employment status, activation of insurance benefits, notification of family members, etc.

NOTE: Any outside (media, family members, etc) requests for information pertaining to any particular MEDEVAC will be directed to the RPSC Resident Manager.

If the MEDEVAC was routine, RPSC Medical will send an email message to the RPSC Human Resources representative in Christchurch indicating what diagnostic tests or treatment has been requested. This notification assists in determining appropriate payment and payment mechanism.

5.5.10 Other Coordination

The Manager will make the movement coordination of the patient via ambulance from arriving aircraft, Terminal Operations in Christchurch. This coordination will include communication with McMurdo regarding specifics of flight arrival and the RPSC's Medical Coordinator in Christchurch with regards to the medical condition of the patient and the site of treatment/care.

A patient's medical care coordination, upon arrival in New Zealand, is assigned to the RPSC Medical Coordinator, Dr. John Pascoe, in Christchurch. This coordination includes identification and initial contact with consulting New Zealand medical professionals in New Zealand.

The coordination transportation and medical care of a civilian patient from New Zealand to the United States or from Los Angeles to the patients' point of origin (in the event a USAP medical provider can escort from New Zealand to Los Angeles), will be made by the RPSC Medical Coordinator. The RPSC Medical Director will insure that an appropriate medical escort service is in place in the United States point of entry for patient care within the United States to the patient's point of origin. The Director will coordinate specific arrangements with the RPSC Medical Coordinator.

The following MEDEVAC/Medical Escort organizations have been identified as potential providers of this service if needed:

Advanced Aeromedical Air Ambulance Service
1-800-346-3556

Aeromedical Transport Specialists, Inc.
703-791-6644

American Aerovac Air Ambulance
1-800-423-5993

Other providers are available through the Internet.

For military personnel requiring medical escort back to the United States, individual organizational assets may be utilized or the military patient evacuation system can be used through the Global Patient Movement Regulation Center (DSN 576 6241/4939).

5.5.11 Recovery

The Medical Escort(s) will ensure that all medical equipment is promptly returned to McMurdo Station. Once equipment is no longer required for patient care the Medical Escort(s) will turn the equipment over to RPSC NZ Terminal Operations and ensure that it is properly identified and manifested as essential medical equipment.

5.5.12 Documentation of MEDEVAC

RPSC Medical will document the MEDEVAC event in the Patient Visit Logging System Database. See User Guide.

5.6 Transport of Deceased Personnel

Transportation of remains is classified a **"Bluebark"** shipment. This is a standard military term. A copy of the death certificate DD Form 2064 must be affixed to the transfer case by medical personnel. Movement of the transfer case from McMurdo to the aircraft should be coordinated between medical and ATO personnel. The casket will be handled by all personnel with dignity and respect for the deceased, loaded onto the aircraft, and stowed near the front of the cabin. The escort, most likely medical or flight crew personnel, should not be separated from the remains. The shipment should move on a hand receipt, which in this case would be the cargo manifest or flight summary manifest. The "Bluebark" shipment will need to be assigned a TCN (use DW9 as the project code) and should be listed as loose load cargo with a PSN of "Bluebark". Weight, if not provided by medical, may be estimated at 600 pounds. If an escort or any other passengers depart on this aircraft, complete a passenger manifest as you would for a normal mission. Do not list the deceased's name on the passenger manifest or the departure message for this mission.

6.0 Mail

6.1 U.S. Mail

For the purposes of the USAP, there are two types of regular mail, letter mail and package mail. Letter mail has the highest priority of routine cargo and is shipped in orange U.S. Mail bags. Each bag will be weighed and carries an individual TCN and is loaded as loose load. Occasionally they may be added to the top of a baggage pallet, however they still carry individual TCNs. Although the bags are water resistant, they are not waterproof so cargo handlers and Loadmasters should take care to prevent the bags from sitting in the snow or in pools of snow melt on the aircraft deck. Package mail has the lowest priority of routine cargo and is typically packed in cardboard triwalls and palletized (see Section 8.7).

6.2 Registered Mail

Registered Mail is mail that is recorded by the post office when sent and is insured by payment of a fee against loss or damage. It is required to be stored under lock and key and each change of custody requires signature of the parties involved. Registered Mail must remain under "constant sight" when not secured and will not be handled by foreign nationals. Registered Mail being carried on flights that do not depart as scheduled should be returned to MCC to be secured in the Post Office.

6.3 Guard Mail

Guard Mail is a term used for small items traveling between McMurdo, South Pole Station, and field camps. It is not official U.S. mail because it is not stamped. Guard Mail can consist of letters, small packages, re-supply items and videotapes, among other things. Guard Mail is collected in MCC in white labeled bags. Guard Mail is prepared for a flight and handled in much the same manner as U.S. mail and it should be given the same considerations. Guard Mail's cannot be overstated since field camps rely on Guard Mail for all of their correspondence and often for emergency re-supply items.

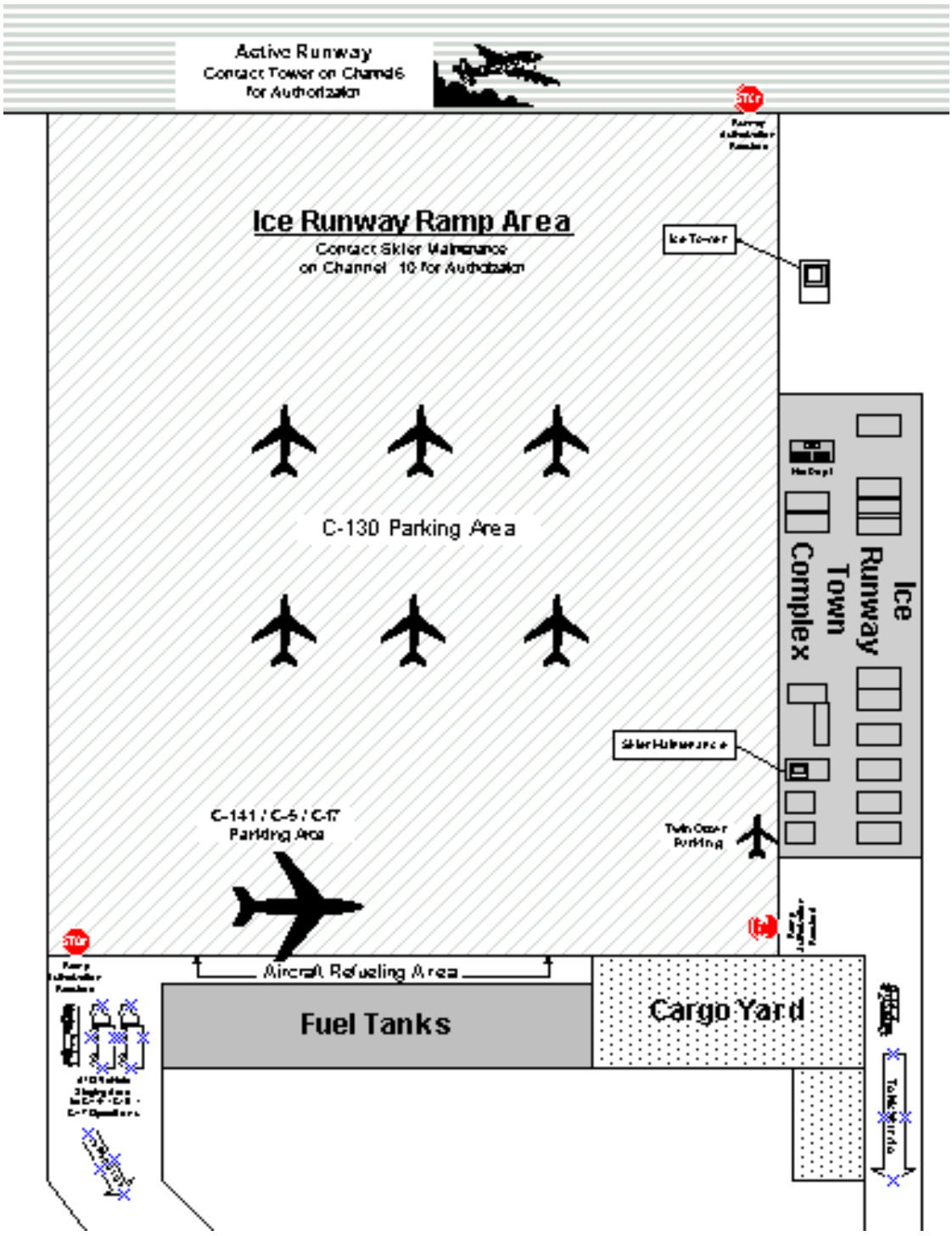
6.4 Annual USAF/APO South Pole Station Postal Audit

In accordance with DOD 4525.6-M, (DOD Postal Manual) Vol. I, Chap 12, Par. 1203.3a, it is mandated that designated representatives shall inspect all assigned APO postal activities at least yearly. The Christchurch USAF APO Postmaster and McMurdo APO Postal Operations Coordinator will inspect the South Pole postal reception station at least once annually after providing South Pole station management with a written request via the ATO Manager.

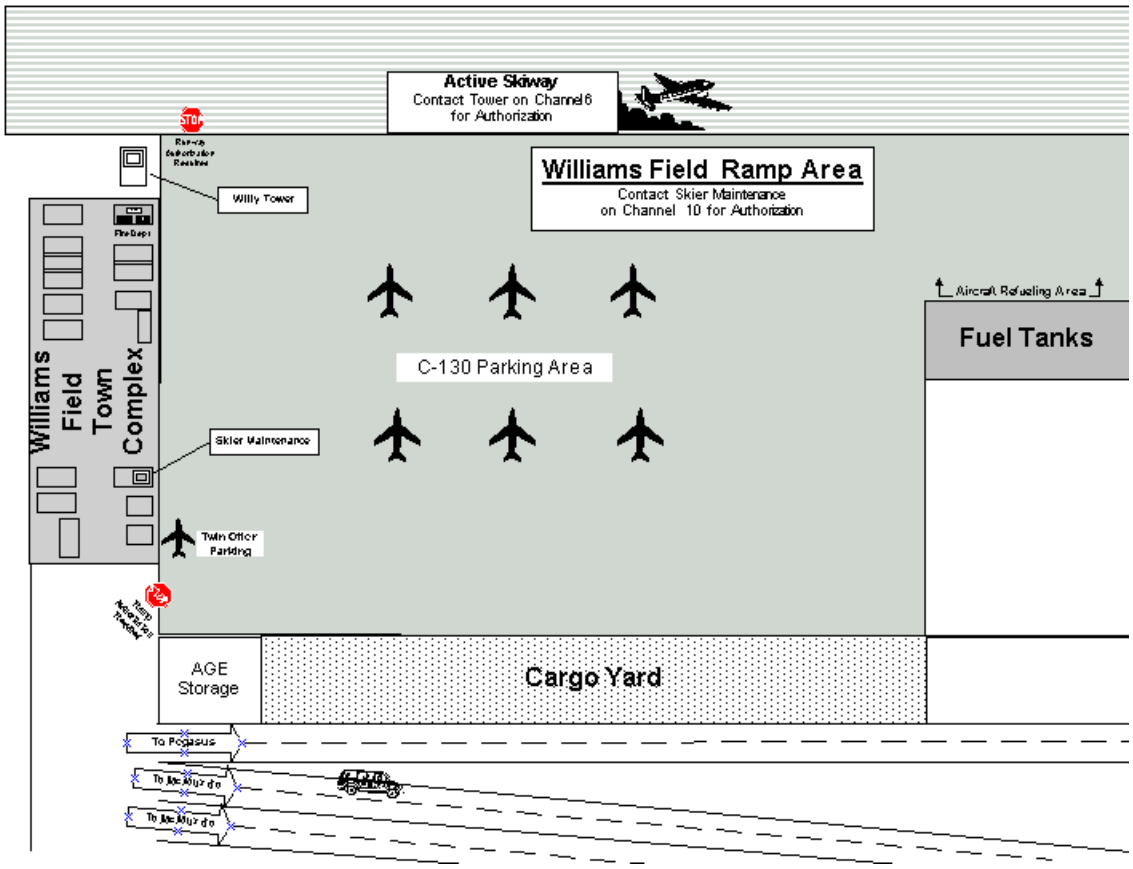
7.0 Aircraft Operations

7.1 Airfield Layout

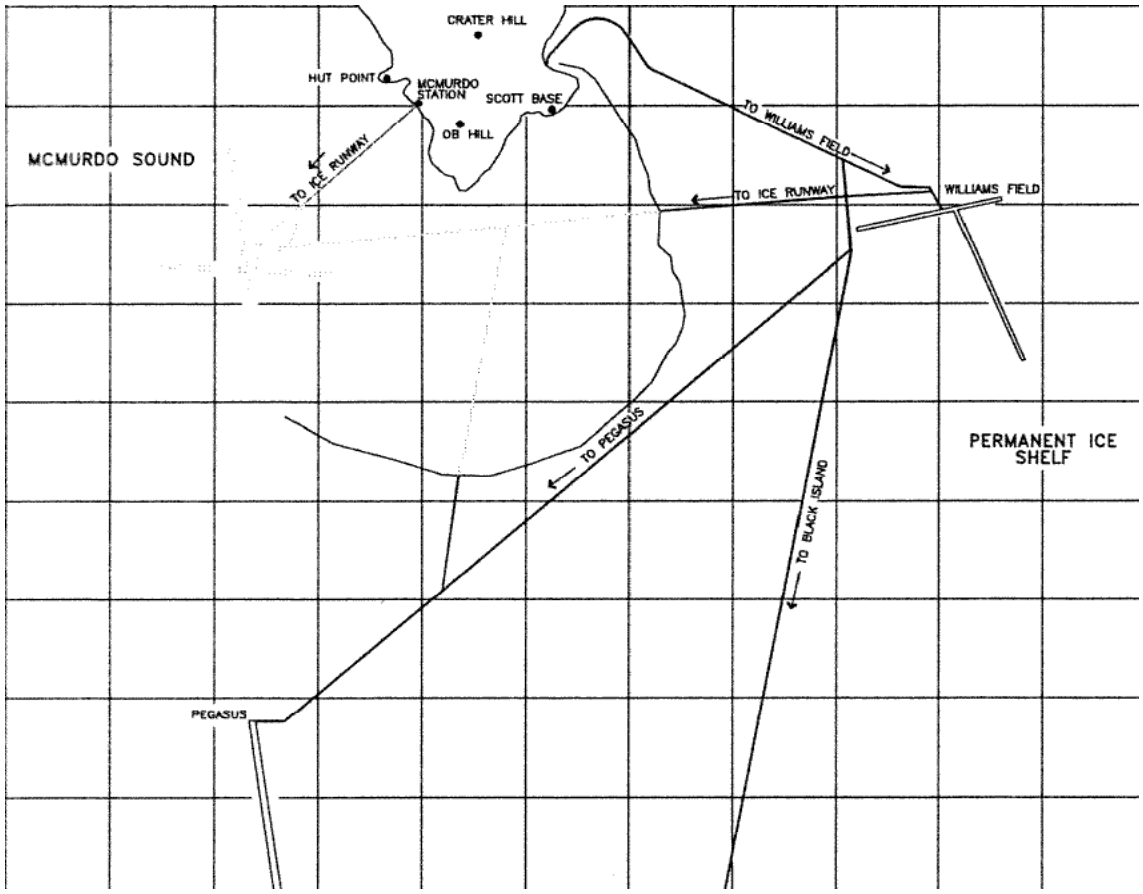
7.1.1 Sea Ice Runway



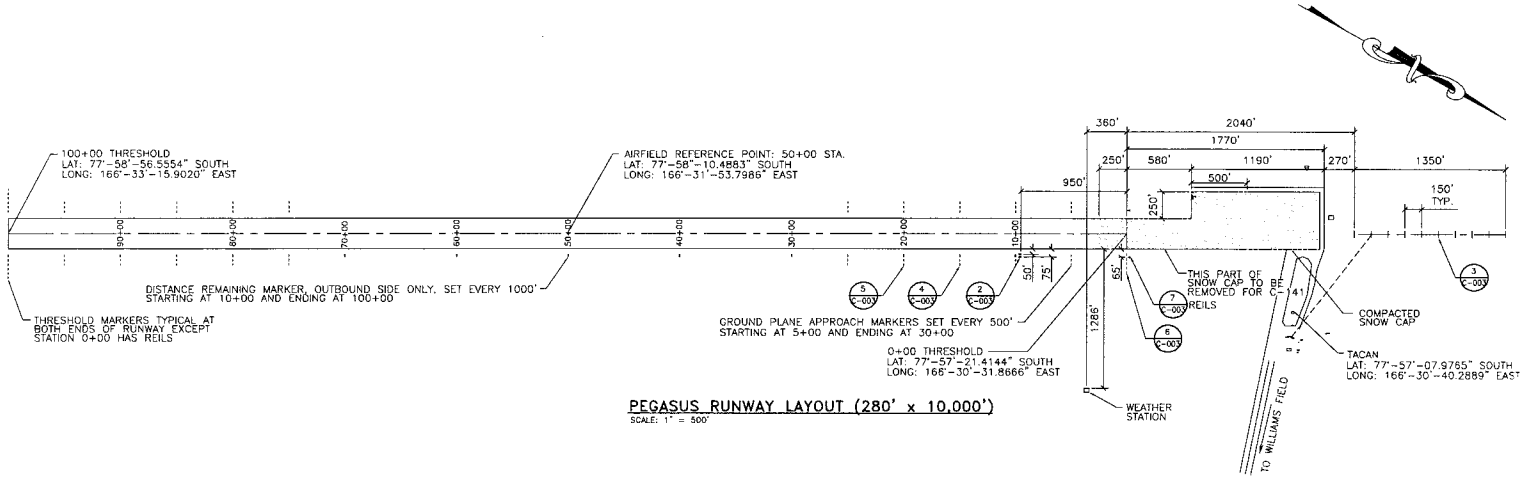
7.1.2 Williams Field Skiway



7.1.3 Pegasus Blue Ice Runway (2 maps)

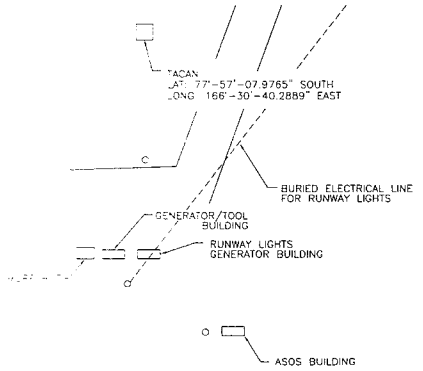


IF SHEET IS NOT 34"x22", THEN USE GRAPHIC SCALE



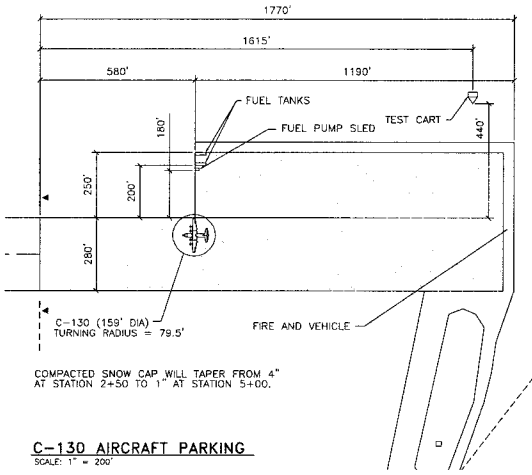
PEGASUS RUNWAY LAYOUT (280' x 10,000')

SCALE: 1" = 500'



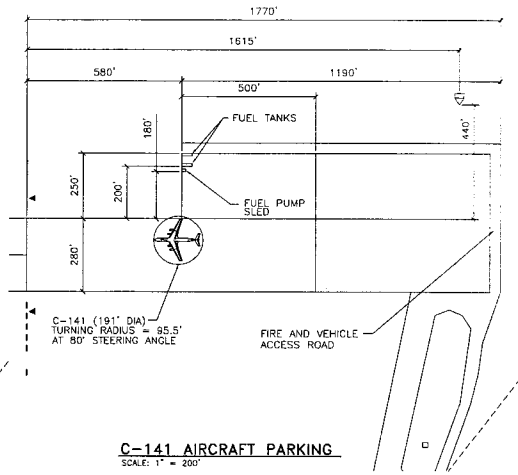
PEGASUS BUILDING LAYOUT

SCALE: 1" = 500'



C-130 AIRCRAFT PARKING

SCALE: 1" = 200'



C-141 AIRCRAFT PARKING

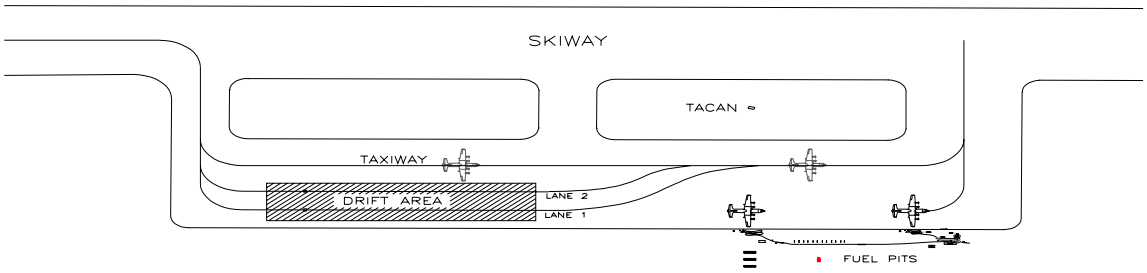
SCALE: 1" = 200'

8 7 6 5 4 3 2

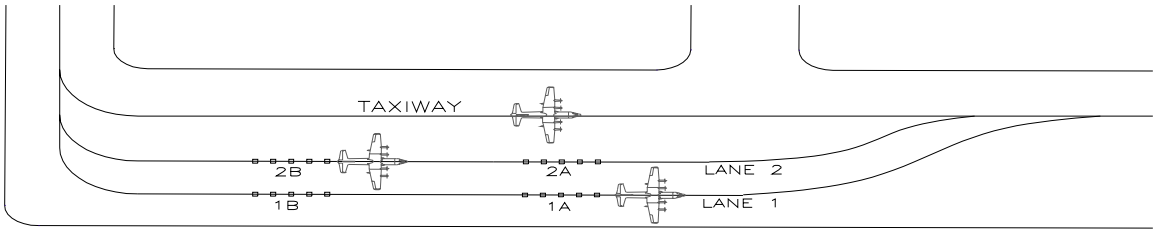
7.1.4 South Pole Field Skiway

The following drawings detail the two drifting lanes that will be used for the initial/final flights when contrails make conventional unloading impossible. There are two drifting lanes (Lane 1 and Lane 2) and two areas for each lane (Alpha and Bravo). The order of preference will be Lane 1 Alpha, Lane 1 Bravo, Lane 2 Alpha, and Lane 2 Bravo. It is very unlikely that all four lanes will need to be used. A plane can pass Lane 1 in Lane 2 and not have its wing pass over pallets in Lane 1. Every effort should be put made to minimize pallet drifting, perhaps by scheduling tanker flights when possible, to avoid cargo damage and a disruption to South Pole Logistics cargo handling operations.

7.1.5 South Pole - Skiway



7.1.6 South Pole - Drift Lanes



7.2 Field Camp Reconnaissance and Skiway Grooming

The Field Services Manager and Fixed-Wing Coordinator will schedule a reconnaissance flight to each of the field camps that will be supported by LC-130 operations. The purpose of that flight will be to take aerial photographs of the proposed Skiway for evaluation prior to attempting an initial landing at that site. If it is determined that Skiway grooming is necessary, snow machines may be delivered for that purpose by Twin Otter aircraft. 109th Operations personnel may decide that an initial aircraft landing is acceptable without grooming but may restrict ACL for safety. That information will be communicated to Fixed Wing Coordinator for load planning purposes. Flights to the field camps, particularly initial put-ins, will take into consideration the potential need for extra fuel, longer take-off runs, and the use of JATO bottles.

The desired Skiway dimensions and surface characteristics will be specified by the Air National Guard and inserted into this section of the USAP Air Transportation Protocol.

7.3 Fueling

7.3.1 Precautions

Passengers are not permitted on or near the aircraft while fueling. Cargo operations during fuel on/off load will occur at the South Pole. It will be considered normal practice to conduct these evolutions simultaneously at the South Pole unless the Aircraft Commander notifies cargo personnel otherwise in advance. Smoking is never permitted in the fuel pits or around the aircraft (see Section 4.4.1). Vehicles should not be operated between the aircraft and the fuel pits while fueling. Passenger loading during fueling operations may only take place at the South Pole and remote locations and then only at the discretion of the Aircraft Commander (see Appendix B).

7.3.2 Procedures

In McMurdo, C-130 and LC-130 fueling will normally be completed just prior to take-off. Cargo operations will be completed before the aircraft taxis to the fuel pits and once fueled, passengers will be driven to the aircraft by Air Service Representatives for boarding. Returning flights will taxi to the parking apron for cargo off/on load. Cargo loading operations are prohibited at the Williams Field fuel pits by the RPS Airfield Manager, who may grant a waiver on an "emergency case-by-case basis only", after consulting with the ATO Manager or Supervisor, MCC. This will minimize Williams Field ramp damage, which greatly hinders efficient ATO cargo operations. Proper flight scheduling normally precludes the need for a fuel pit cargo loading waiver (see Sections 3.3.2 and 3.3.3).

At the South Pole, cargo/pax operations and fueling will occur simultaneously in the fuel pit to minimize ground time (see Section 7.3.1 and Appendix B). C-5, C-17 and C-141 aircraft arriving at the Sea Ice and/or Pegasus Runways will conduct cargo operations while fueling to minimize ground time.

7.3.3 Delivery of Fuel to South Pole Station

Normally, flights to the South Pole will carry extra fuel to make up for any ACL not utilized by cargo, and deliver that surplus fuel to the station. Once defueling is complete at South Pole Station, the aircraft departure must not be delayed since fuel remaining on board has been calculated for a specific return time. South Pole tanker flights normally carry a ramp pallet of high-priority cargo to keep it moving. Should maximum fuel delivery to South Pole Station be desired, some LC-130 aircraft are capable of carrying its entire ACL as fuel in the wing tanks. Those that are not capable of this will be able to carry in the area of 3,000 pounds of cargo. The amount available will be supplied by Raven Operations. Tanker missions should be scheduled whenever possible during contrail conditions provided that no critical cargo is on-hand for transport (see Section 3.9.3). ATO or South Pole Logistics must be notified immediately if South Pole retro cargo (DNF, Science, Waste, or otherwise) is refused from a mission. The Loadmaster must also provide his reason(s) for any such rejections so that an alternative load can be arranged (see Section 3.0).

7.4 Temperature and Contrail Limitations

The 109th Airlift Wing will not operate at any camp where the ambient air temperature is less than –50 degrees C without authorization from the 109th Air Operations Officer/Operations Group Commander (AOO/OG/CC). The 109th Airlift Wing will not offload/onload cargo that requires Material Handling Equipment (MHE) when surface contrails exist that obscure the visibility of the loading crews. When operating at the South Pole, cargo requiring MHE will not be planned at temperatures colder than –45 degrees C without proper Organizational Risk Management (ORM) and 109th Airlift Wing Deployed Commander approval on a case-by-case basis. This is per the letter dated 01SEP00, 109 OG/CC (excerpt from USAF AFI 11-2C-130, Chapter 10, Annex B (109th AW local unit policies)). In these circumstances, the 109th AW Deployed Commander will first consult with the Assistant Supervisor, ATO and the Fixed-Wing Coordinator to reasonably resolve any related cargo and passenger movement issues.

At extremely low temperatures the exhaust of the aircraft condenses forming contrails that impair visibility. The formation of contrails is dependent upon surface air temperature and moisture content but typically begins to occur at temperatures below -45 degrees C. The contrails greatly impair visibility aft of the aircraft wing and can have a significant impact on the ability to safely conduct cargo operations. Reversing the pitch of the aircraft propellers while at ground idle may mitigate the impact of the contrails.

7.5 Whiteout Zone Procedures

The Whiteout Zone is an area on the permanent ice shelf which is relatively level and has been surveyed clear of obstructions and crevasses. It permits aircraft encountering zero visibility conditions at the McMurdo airfields to maintain landing attitude at a constant rate of decent until contact with the ground is made. The zone is within the radar coverage of air traffic control so aircraft utilizing the zone can be monitored until

touchdown. It is sufficiently close to McMurdo Station to permit rapid Search and Rescue response even in severe weather conditions. Flight procedures for landing in the Whiteout Zone are contained in the 109th Air Operations Manual.

7.6 Scheduling and Departure Intervals

The daily airlift requirements are collated by the Fixed-Wing Coordinator from requests received through communication with South Pole, field camps, and McMurdo area science projects. The Fixed-Wing Coordinator then coordinates these requirements with the 109th Operations Officer who advises on the number of aircraft and crews that are available and whether the forecast weather will support the required destinations. Once agreement is reached between the ANG and the Fixed Wing Coordinator, the plan is promulgated so that ATO can build the missions with cargo and passengers (see Section 3.0).

Routinely, five to seven flights a day will be scheduled with three or four flights leaving in the morning and two or three flights leaving in the afternoon. Departure times will be scheduled with approximately 45-minute intervals. Occasionally "double-shuttles" will be scheduled to nearby field camps, which allows one flight crew to make two round trips within their allotted crew day. South Pole Logistics requires a minimum of 45 minutes separation time between aircraft arrivals to conduct cargo handling operations. Tanker flight separation times are more flexible.

8.0 Communications

8.1 McMurdo I-Net and Radio Channel Assignments

The McMurdo I-Net is broadcast in Raven Ops, McMurdo Ops, Weather, and MCC. It is utilized to publish changes to the daily flight schedule as they occur and other information of general importance to station operations. At the beginning of each summer season, McMurdo Operations will determine radio channel assignments. Typically, the following communications plan is employed:

Channel 1	I-Net used for general announcements and shuttle operations
Channel 2	Airfield fire and rescue
Channel 5	Fleet operations
Channel 6	Active airfield tower
Channel 9	Fuel operations
Channel 10	Airfield ground operations and ATO cargo operations
Channel 11	Helicopter operations

8.2 Airfield Vehicle Operating Procedures

8.2.1 General Information

Indoctrination Course for Vehicle Operators

A mandatory airfield vehicle operator's course has been developed for all persons that will operate vehicles on the airfield. Raytheon Polar Services Company (RPSC) Airfield Manager is responsible for the administration of the course, which is an annual requirement for airfield vehicle operators or personnel performing duty on airfields. Upon successful completion of the course a drivers permit will be issued. Class attendance for the course will be documented, and a record retained on file with RPSC. If there are any questions regarding what the proper procedure is for accessing the taxiways and runways/skiways, don't hesitate to contact the RPSC Airfield Manager.

Airfield Operating Areas:

All vehicles operating on the airfield shall be radio-equipped or escorted by radio-equipped vehicles only. Prior to any operations on the taxiways and runways/skiways, vehicles shall receive a clearance from the control tower on FM channel 6. In the event the control tower experiences a power outage, light signals will be used. When the control towers at Williams Field Skiway and the Sea Ice Runway are closed, the airfields are uncontrolled. Personnel shall verify with the Fire House via radio on Channel 2 before proceeding on skiways or runways when the towers are closed. Vehicles or personnel requiring access to the Pegasus Blue Ice Runway shall contact the Fire House on Channel 2 prior to entry onto the Pegasus Runway and monitor the radio at all times. For operations on the aircraft parking ramp area, vehicles will receive clearance from Skier Maintenance on FM Channel 12.

Other Than Airport Vehicles

Airport movement areas are defined as: runways, skiways, taxiways and other areas of an airport which are utilized for taxiing /hover taxiing, air taxiing, takeoff, and landing of aircraft, exclusive of loading ramps and parking areas. At airports with a tower, specific approval for entry onto the movement area must be obtained from Air Traffic Control. Whenever vehicles not regularly used on the airfield are required for operations on airport movement areas, it shall be coordinated through the Air Traffic Control Tower Supervisor prior to the operation being conducted.

Pegasus Runway

Vehicles operating at Pegasus Field shall obtain clearance from the fire department vehicle posted at Pegasus Field on FM Channel 2 prior to entering the airfield. Personnel and/or equipment are prohibited from the airfield during the arrival or departure phase of aircraft movements.

8.2.2 Airfield Rules

Right-of-way rules

1. Emergency vehicles have the right-of-way over all vehicles and aircraft when responding to an emergency.
2. Taxiing aircraft have the right-of-way over all vehicles other than those responding to an emergency.
3. Vehicles shall not overtake or pass a taxiing aircraft unless the control tower instructs otherwise.

NOTE: Operators should continuously be aware of other vehicle operations by monitoring radio communications and visually scanning the movement area around their position.

Speed Limits

Emergency vehicles when responding to an emergency: as required
All other vehicles: 10 mph on the ramp area, 25 mph on the runways/skiways

"Circle of Safety"

A circular area with a 25-foot radius around parked aircraft. Vehicles not directly involved in loading, maintenance or servicing of aircraft will avoid approaching the aircraft and will remain outside the "circle of safety". This circle is extended to 50 feet if aircraft engines are turning. Support personnel shall not approach an aircraft until directed to do so by aircrew.

8.2.3 Airfield Communications

Frequency Usage

All vehicles operating on the taxiways and runways/skiways shall contact the tower on FM channel 6 for clearance. All vehicles operating on the ramp should contact "Skier maintenance" on FM channel 10.

Required Transmissions

Vehicles operating on the taxiways and runway/skiways shall communicate via FM channel 6 with the control tower as follows:

1. Prior to entering any portion of the taxiways and runway/Skiway, contact the tower and advise them of:
   a. Who you are
   b. Where you are
   c. Where do you want to go, or your intentions on the runway/Skiway
2. When exiting any portion of the taxiway and/or runway/Skiway.
3. Whenever exiting the vehicle while on the taxiways and/or runway/Skiway.

4. When Williams Field is open, contact the tower for clearance crossing through the approach light section of the primary Skiway. This area is very close to the threshold of the Skiway.

Radio Discipline

1. Listen before transmitting to ensure the frequency is not in use.
2. Know what you want to say prior to keying the microphone.
3. Keep transmissions brief and to the point.
4. Never use the radio for unnecessary verbiage or excess conversation.
5. Profanity is strictly prohibited.

Radio Phraseology

When the tower is open (communicate on FM channel 6), obtain clearance from the tower to proceed on the runway. Position your vehicle behind the "hold short" area (abeam the tower) and ensure your vehicle is as close to the edge of the taxiway/ramp area as possible.

General Phraseology

"*Tower, (vehicle callsign), request clearance to proceed from (location) to (location)*

Example:

"Tower, (vehicle callsign), request clearance from the taxiway/ramp abeam the tower to the approach end of runway 25"

Or

"Tower, (vehicle call sign), on the Pegasus road, request clearance through the approach lights of Skiway 25"

Wait approximately 10 seconds before calling again if you haven't received a reply

Possible responses from the tower

"*(Vehicle callsign), Tower, proceed from the taxiway/ramp abeam the tower to the approach end of runway/Skiway 25"*

Or

"(Vehicle callsign), Tower, proceed to the approach end of runway/Skiway 25"

Or

"(Vehicle callsign), Tower, proceed as requested"

Or

(Vehicle callsign)", Tower, Hold short"

NOTE: Vehicle operators shall read back all "Hold Short" instructions!

"(Vehicle callsign), Holding short"

Upon approval, respond with one of the following:

(Vehicle callsign), Proceeding to the approach end of runway/Skiway 25"

Or

"(Vehicle callsign), Proceeding"

NOTE: Do not stop or detour along the way without first advising the control tower/station 2 of your intentions.

1. Once you have cleared the runway/Skiway, you must advise the tower immediately:

"Tower, (Vehicle callsign), is clear of the runway/Skiway"

Make sure you receive an answer from the tower and advise it until you get a response:

"(Vehicle callsign), Tower, roger"

2. As a reminder, advise Station 2, on FM channel 2, prior entering onto the runways when the tower is closed.

Radio Failure

If radio failure occurs or a vehicle operator is unable to establish radio contact with the control tower, the operator shall take the following action(s) as appropriate:

1. Do not enter the aircraft movement areas (runways/skiways or taxiways area).
2. If the radio is inoperative, have it repaired or replaced prior to subsequent attempts to enter the aircraft operating areas.
3. If the radio fails while on the aircraft movement area, move the vehicle off the runway/Skiway or taxiway and remain clear until the radio problem has been resolved. Should all attempts fail to restore the radio, flash your lights at the tower and watch for the appropriate light gun signal.

Light Gun Signals:

All airfield vehicle operators shall be familiar with FAAO 7110.65 Air Traffic Control light signals.

LIGHT	**MEANING**
STEADY RED	STOP, DO NOT MOVE
STEADY GREEN	PROCEED AS REQUESTED
FLASHING RED	CLEAR THE AREA IMMEDIATELY EXIT THE RUNWAY IMMEDIATELY
ALTERNATING RED/GREEN	GENERAL WARNING, USE CAUTION
FLASHING WHITE	RETURN TO STARTING POINT ON THE AIRFIELD

8.3 Promulgating Schedule Changes/Delays

All changes to the daily flight schedule will be made over the I-Net (channel 1). An I-Net announcement is the ONLY official means for publishing a change. Word of mouth, phone calls and/or radio announcements on other channels may be used to pass information on changes, however all official announcements of flight schedule changes MUST be made on the I-Net. Once announced, status boards in MCC (manned 24 hours a day) and Raven Ops will be updated to reflect the change. During occasions of ongoing delays due to maintenance or weather, periodic updates should be announced on the I-Net. Additionally, when Air Services personnel are waiting with passengers to board a flight that is delayed, Skier Maintenance should advise them, via channel 10, of the status of the delay at intervals not to exceed 30 minutes. The call for passengers and announcement of flight delays at South Pole Station will be accomplished using the All-Call announcing system. It is anticipated that a common flight status board similar to the one maintained in MCC will soon be available throughout McMurdo on monitors. When that system is fully operational, the flight status board on the display will be the official means for promulgating changes to the flight schedule (see Sections 3.0 and 8.7).

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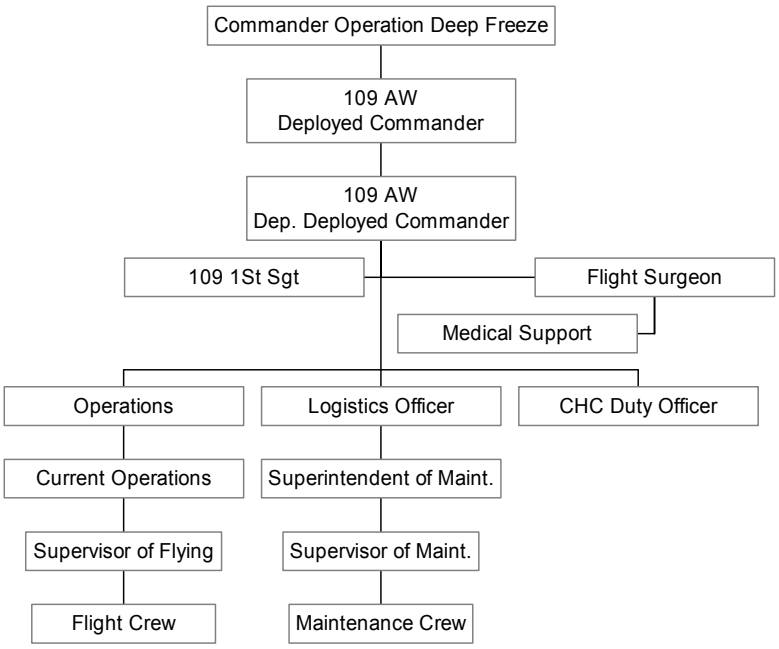
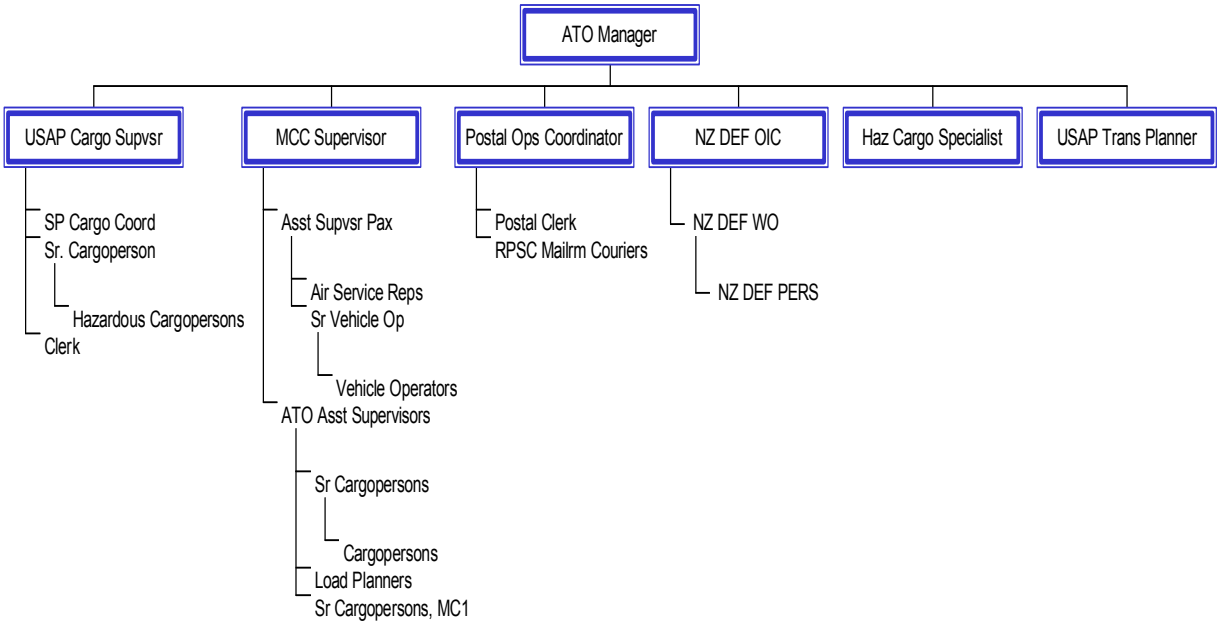
8.4 Chain of Command

8.4.1 Air National Guard



8.4.2 RPS Antarctic Terminal Operations



8.4.3 ATO/ANG/USAF/AntNZ Points of Contact

The table below lists the primary points of contact and their associated counterpart.

Position	Responsibility	Ext.	Position	Responsibility	Ext.
ATO Manager	Manages all RPS ATO operations	x2226	CODF Commander of Operation Deep Freeze	Responsible for all U.S. military personnel and assets south of 60 degrees south latitude and Det. 13 in CHC.	*TBD*
ATO Manger	"	"	109th Deployment Commander	Manages all 109th AW Operations	*TBD*
ATO Manager	"	"	Operations Manager, AntNZ	Operates Scott Base and POC for the RNZAF and NZDF.	*TBD*
Asst. Supervisor, Passenger Operations	Manages passenger transportation operations.	*TBD*	Detachment 13 Executive Officer	Manages military passenger movements and scheduling	*TBD*
Air Services Reps	Crew & Pax manifesting and transport	x2347	109th First Sergeant	Personnel issues and billeting	*TBD*
Supervisor, MCC	Manages Call Forward items	x2258	109th Supply	Manages 109th inventory of parts	*TBD*
Asst. Supervisor, ATO	MCC Shift Sup. Mission building and receiving	x2258	109th Senior Loadmaster	POC for questions and approval for outsize pallets	*TBD*
MC1	Supervises airfield cargo operations	CH 10 or x3284	Aircraft Loadmaster	Load/Unload passengers and cargo on aircraft	*TBD*
Supervisor, USAP Cargo	Processes all retrograde cargo	x2546	109th Supply	Manages 109th equipment retrograde	*TBD*
Hazardous Cargo Specialist	Certifies all HAZMAT cargo and provides on-ice training and expertise on all related issues.	x2546	Logistics Group Commander	POC for USAF Hazardous Cargo shipments	*TBD*

8.5 Air Operations Planning Board (AOPB) Meetings

During the summer season in McMurdo, AOPB meetings will occur twice weekly to review the planned weekly flight activities. The Fixed-Wing Coordinator chairs these meetings. Attendees will include the NSF Representative, ATO Manager, Supervisor, MCC, Fixed-Wing Coordinator, NZDF Detachment Commander, Supervisor, Helicopter Operations, 109th AW Commander, Commander - Operation DEEP FREEZE, and a representative from fuels, weather, ATS, and Scott Base.

8.6 NSF Cargo Priorities

The NSF will establish the priority for cargo movement from Christchurch to McMurdo. For the day-to-day management of airlift, ATO employs the following general order of priorities per NSF direction:

Letter mail
Call Forward items
Science Cargo
Special Projects Cargo (SPSM for example)
All other cargo by ROS date
Freshies
Package mail

Exceptions to this priority list can only be granted by the NSF, which also has the responsibility for resolving competing airlift requests possessing similar priorities. In order to ensure adherence to the priorities, only the MCC supervisor or assistant supervisors for cargo will be authorized to change a load configuration. The Fixed-Wing Coordinator will communicate field camp cargo priorities to the MCC supervisors and USAP Cargo Supervisor. Northbound retrograde priorities will be communicated to MCC supervisors by the USAP Cargo Supervisor. Priorities for South Pole Station cargo will be determined by the Supervisor, South Pole Logistics and communicated to MCC supervisors and the USAP Cargo Supervisor via the South Pole Cargo Coordinator in McMurdo.

8.7 Call Forward Procedure

Cargo that is required on-site sooner than the scheduled ROS date may be requested for shipment on the next available flight. The "Call Forward" is the process that initiates this action. Call Forwards are submitted to Supervisor, MCC and must include the TCN, PSN, weight, description, original and requested ROS dates, and a justification for why the item is needed. A Call Forward request may be denied because of insufficient justification, in which case, an appeal may be made to the NSF Representative. Once a Call Forward is entered into the system it will receive the highest shipping priority within the USAP cargo system. ATO is not responsible for delays that may occur prior to the item being entered into the USAP cargo system. Occasionally the number of outstanding Call Forwards is such that they exceed the ACL of the next available flight. In such

instances, the ATO Manager will consult with the NSF Representative to determine priority (see Sections 3.0 and 8.7).

8.8 Mission Numbering Scheme

Intercontinental missions are designated according to the following scheme (see airfield codes in the next section):

Aircraft	Destination ZCM	Destination CHC	Explanation
USAF	AZM	ACH	A for Air Force
RNZAF	KZM	KCH	K for Kiwi
IAF	IZM	ICH	I for Italian
109th AW	GZM	GCH	G for Guard

Note: 1) Each letter code will be followed by a sequential numbering system beginning with 001. Example: the 3rd IAF mission to Christchurch would be ICH003.
2) Kiwi missions are referred to as “Ice Cube".

The LOCATIONS and ALPHA CODES will change from season-to-season.
The Fixed-Wing Coordinator will distribute these changes to all agencies.

Missions to the inland field camps and the South Pole Station (intra-continental) are typically designated according to the following scheme *(example only):*

Location	Alpha Code	Airfield Designator
AGO Sites (1 through 6)	A	AGO
Byrd Surface Camp	T	NBY
Darwin Glacier	D	DRM
Ford Range	F	FRD
Ice Stream C	E	STC
Long Duration Balloon	N	LDB
McMurdo Station	M	ZCM
Patriot Hills	H	PHL
Reedy Glacier	R	RDG
Siple Dome	S	SDM
South Pole Station	P	NPX
Terra Nova Bay	I	TNB
Vostok	V	VOS
Downstream B	B	DNB
Graves Nunatak	G	GRV
Mt. Moore	J	MTM
TAMESEIS Camp	K	TAM
Odell Glacier (Wyandot Ridge)	L	ODL
Onset D	O	OND
Pensacola Mountains	Q	PSM

Mt. Moulton	U	MOU
Beardmore Glacier	Y	BDM
109th Non-Airlift Flights	Z	XXX

Christchurch, NZ	C	CHC
Port Hueneme	X	PTH
Search & Rescue Mission	W	various

Note: 1) Each Alpha Code will be followed by a sequential numbering system beginning with 001. Example: The 2nd mission to the Vostok would be V002.
2) The intracontinental missions are not labeled according to aircraft type or Military branch like the intercontinental missions. They simply use the alpha designator followed by the next sequential number.
3) An "R" at the end of a mission number denotes a returning intracontinental mission.
4) The aircraft type and tail number will be noted on the Flight Summary Manifest. NYANG tail numbers are denoted as "SKIERS", i.e. SK93.
5) The above chart reflects the FY 2001-02 Designator and Alpha Codes (to be updated annually).

8.9 Mission Documentation

A Flight Packet contains all paperwork necessary for the flight crew, destination, and MCC records. It consists of the following documents:

Flight Summary Manifest: A record of specific flight data and summary of the mission report signed by the ATO Load planner and the aircraft Loadmaster.
(6 copies): Original in Loadmaster envelope for signature, for MCC mission packet
Loadmaster
Kiwi Load Shack
MCC Folder (along with original with signatures)
Mission Envelope (destination envelope)
NZ Customs Envelope (for northbound CHC flights only)
Passenger Coordinator

Mission Report: CTS generated inventory of cargo and passengers that summarizes the pallet reports, passenger manifest, loose load cargo, and hazardous data. Generated by ATO Load Planner.
(4 copies): Loadmaster
Kiwi Load Shack
MCC Folder
Mission Envelope

Pax Manifest: Generated by Air Services Representative. Every passenger travelling on a fixed wing mission within the USAP must be accounted for on the PAX Manifest.
(5 copies): Loadmaster
Kiwi Load Shack

MCC Folder
Mission Envelope
NZ Customs Envelope

Hazardous Cargo Notification: A summary of all hazardous cargo manifested for the flight, also serves as the passenger deviation request if required. It is signed by the ATO load planner, aircraft Loadmaster, and in the case of a deviation, the aircraft commander.
(4 copies): Loadmaster
Kiwi Load Shack
MCC Folder
Mission Envelope

Shipper's Declaration for Dangerous Goods: Each piece of hazardous cargo will have a hazardous certification completed by an authorized hazardous material specialist.
(3 copies) Loadmaster
MCC Folder
Pallet Envelope

Pallet Reports: A record of every TCN contained on a pallet. Generated from CTS by the ATO Load Planner using data supplied by the Cargo Handlers. Most pallets are built in the hand held TRAKKERS by the Cargo Handlers and then downloaded directly into CTS. The TDE used, along with the pallet height and the gross weight, are commonly entered manually. The calculated and actual weights are verified to ensure the difference is not greater than 10%. If it is, then the pallet is re-weighed to ensure its accuracy.
(2 copies): Pallet Envelope
MCC Folder

Flight Departure Messages: Generated by Air Services to document an aircraft departure.
(1 copy): MCC Folder

Polar Mission Summary: Completed by the Aircraft Commander to document flight information and personal comments.
COPY: MCC Folder

9.0 Terminology

91 Organizations

62nd Airlift Wing – McChord AFB, WA
109th Airlift Wing – New York Air National Guard
452 Air Mobility Wing – March ARB, CA
AMC – Air Mobility Command
ANG – Air National Guard
AntNZ – New Zealand Antarctic Program
ATO – Antarctic Terminal Operations, Raytheon Polar Services

CHB – U.S. Navy Cargo Handling Battalion (NAVCHAPS)
Detachment 13 – The USAF detachment which provides the link to DOD for the USAP. This detachment is based in Christchurch and is the year-round base for the CODF.
DOD – Department of Defense
DOT – Department of Transportation
IATA – International Air Transportation Association
IAP – Italian Antarctic Program
MSC – Military Sealift Command
NASA – National Aeronautics and Space Administration
NAVCHAPS – Navy Cargo Handling and Port Services personnel (U.S. Navy Cargo Handling Battalion) that provide seasonal longshoreman and cargo handling services to the U.S. Antarctic Program.
NICL - The U.S. National Ice Core Laboratory (NICL) is a major facility in Denver, CO for storing, curating, and studying ice cores recovered from the polar regions of the world. It provides scientists with the capability to conduct examinations and measurements on ice cores and it preserves the integrity of these ice cores in a long-term repository for current and future investigations.
NOAA – National Oceanic and Atmospheric Administration
NZDF – New Zealand Defense Forces (provides military cargo handlers and longshoremen to the USAP program)
NSF – National Science Foundation
OPP – Office of Polar Programs. The office within the NSF responsible for funding and administrating the USAP.
RNZAF – Royal New Zealand Air Force (C-130 operations)
RPS – Raytheon Polar Services
SPAWAR - Space and Naval Warfare Systems Command providing operational and technical support to the U.S. Antarctic Program. It also operates Aviation Technical Services (ATS) in McMurdo.
TALCE – USAF tanker airlift control element
USAP – United States Antarctic Program
USGC – United States Coast Guard
USAF – United States Air Force
USMM – United States Merchant Marine
USTRANSCOM – United States Transportation Command

9.2 Locations

Amundson-Scott South Pole Station – South Pole research base maintained by the United States Antarctic Program.
IACY – International Air Cargo Yard (Christchurch, NZ).
CONUS – Continental United States.
Field Camp – Outlying Research Sites.
MCC – Movement Control Center, which is the main control hub for all ATO communications, cargo, passenger, and APO postal operations..
Pegasus Blue Ice Runway – Solid ice runway built on a permanent blue or multi-year ice shelf.

Port Hueneme, CA – Naval Construction Battalion Center. Main staging point for USAP material movements.
Scott Base – New Zealand's main Antarctic research base located on Ross Island near McMurdo Station.
Williams Snow Field – Skiway built on snow 7 miles from McMurdo Station.
McMurdo Station – USAP's main logistics and research base.
Sea Ice Runway – Solid ice runway built on temporary sea ice.

9.3 Transportation

Alpine – Large heavy-pull snowmobile.
AMC Channel Flight – Regularly scheduled flights by the AMC (through NZ).
C-130 – Lockheed Hercules propeller driven aircraft.
C-5 – Large jet cargo aircraft. Can hold 36 single pallets and 73 passengers. Can carry 150,000 pounds for Antarctic missions, but is rarely used there anymore
C-17 – Large jet cargo aircraft. Can hold 18 single pallets or 64 passengers with 11 single pallets and ACL of approximately 120,000 pounds for Antarctic missions.
C-141 – Jet cargo aircraft, holds 13 pallets or 114 Passengers and 40,000 pounds for Antarctic missions.
ComAir – Commercial Air Freight.
ComSur – Commercial Surface Freight (Ocean Vessel).
Delta – Center articulated cargo and passenger transport vehicles with balloon-type tires.
Hagglunds – An all terrain tracked vehicle used primarily for Search and Rescue.
K-Loader – 25K, 40K or 60K mechanized aircraft loading platform.
Kilo Air – Airlift occurring during the time period when the Ice Runway is operational
LC-130 – Ski-equipped Lockheed C-130 Hercules propeller driven cargo aircraft
MHE – Material Handling Equipment used to move cargo at the runways or elsewhere
M/V Green Wave – Annual resupply break-bulk ship contracted by the NSF from the Military Sealift Command.
PSR - Point of Safe Return. The point along the route of flight, which upon passing, commits the aircraft to landing at its destination.
R/V N. B. Palmer – Research vessel chartered by the USAP
R/V L. M. Gould - Research vessel chartered by the USAP
SAAM – Special Assignment Airlift Mission
Skidoo – Snowmobile brand used by the USAP.
Twin Otter – Small twin engine aircraft used by the USAP.

9.4 Hazardous Materials

AFJMAN 24-204 – Air Force Joint Military regulations outlining the requirements for certification of Hazardous Goods for transportation.
CAO – Cargo Aircraft Only, no civilian passengers are allowed on aircraft with certain Hazardous items unless a specific waiver is granted.
Compatibility Group Letter – A designated alphabetical letter used to categorize different types of explosive substances and articles for stowage and segregation.

Flash Point – The minimum temperature at which a liquid within a test vessel gives off vapor in sufficient concentration to form an ignitable mixture with air near the surface of the liquid.
Hazard Class – Classification given to hazardous material for quick identification (1-9).
Hazardous Cargo Preparers – Personnel whose duties require them to sign legally binding documentation certifying that hazardous materials are properly classified, packaged, marked and labeled, and in all respects meet the legal requirements for transportation within the DTS or by commercial carriers.
Hazardous Material – Any material capable of posing an unreasonable risk to health, safety or property when transported.
IAEA – International Atomic Energy Agency. Primary agency that sets standards for shipping radioactive materials. It has established regulations, which have become the basis of all other international and domestic regulation.
IATA – International Air Transport Association. Commercial air dangerous goods regulations used by most countries excluding the United States.
ICAO – International Civil Aviation Organization. Governing regulations for the transportation of hazardous materials by air. IATA is based on these regulations.
IMDG – International Maritime Dangerous Goods Regulations, Regulates the international transportation of hazardous goods by ocean vessel.
IMO – International Maritime Organization. United Nations governing body for the IMDG Code.
Shippers Declaration for Dangerous Goods – A certification for each article classified as a Hazardous for transportation by Air, Sea or Land.
JATO – Jet-Assisted Take Off bottles (jet thrust equipment or rocket motors) used to provide additional thrust to LC-130 aircraft operating in Antarctica. The U.S. Navy term "JATO" will be used in this USAP Air Transportation Protocol, instead of the standard USAF "ATO" acronym, to avoid confusion with the Antarctic Terminal Operations (ATO) Department.
TDG – Transportation of Dangerous Goods. Canadian hazardous regulations.
UN Number – United Nations identification number, used for identifying an individual class of hazardous material.
49 CFR – U.S. Code of Federal Regulations, Title 49. The US Department of Transportation's hazardous material transportation regulations. This is the governing regulation for all domestic hazardous shipments within the U.S.

9.5 General Terminology

APO – McMurdo's Air Post Office operated by Raytheon Polar Services under U.S. Air Force regulations for the United States Antarctic Program.
ACL – Allowable Cabin Load. Total weight of cargo and passenger load allowed.
Bag Drag – Passenger and baggage weigh-in prior to a flight.
Baggage Pallet – A specially constructed wooden frame strapped onto a standard USAF 463L aircraft pallet that is designed to transport baggage, when required.
CTS – Cargo Tracking System database used to track cargo in the USAP system.
Call Forward Cargo – Cargo with a ROS (Receive On-Site) date that is moved forward for a justifiable reason by the Supervisor, MCC only.

Carboy – A transport unit for liquids with a faucet.
Challenger – A tracked Caterpillar tractor. Uses rubber tracks and has higher speeds than conventional tracked vehicles.
CONEX Box – a military storage container, 8'X8'X8'.
Consignee – The station or individual who receiving a shipment.
Consignor – The station or individual initiating a shipment.
Cube – Cubic Feet, determined be L"XW"XH" and divided by 1728.
Deployment – Initial passenger transportation to Antarctica.
DEWAR – Special container for the storage and dispersal of cryogenic liquids.
Drifting Cargo – The practice of lowering the cargo ramp of an aircraft and dropping the pallets onto the ground off of the ramp while taxiing slowly.
ECW Gear – Extreme Cold Weather clothing used for Antarctic Operations.
E/R/R – Evaluate/Repair/Return -- process by which items are sent off the ice for repair.
Flat-rack – a 20' or 40' marine container that is open on the top and both sides with collapsible ends for stacking/transport when empty. Never cut the banding on flat-rack cargo without wearing a hard-hat, using extra assistance, and exercising extreme caution. Flat-rack cargo is notorious for shifting while enroute via ocean transport because there are no side-panels to support the load.
FSM – Flight Summary Manifest; a summary description of the aircraft's payload for delivery to destination (i.e. a manifest for the aircrew and also a cover sheet for ATO flight mission packets).
(To) Freight Train Cargo – To lower the cargo ramp and drop the cargo while taxiing forward.
Freshies – Fresh food airlifted to Antarctica (i.e. fruits, vegetables and dairy products).
Fuel Bladder – Rubberized collapsible fuel storage tanks.
GENNOS – General Cargo Not Otherwise Specified.
Grantee – A scientist who is doing research in Antarctica.
Green Bag – A bag container survival gear for two personnel. Used on all flights carrying passengers.
Half-Rack – Set of steel storage cylinders used for compressed gases - usually half the height of standard containers.
Herman Nelson – A portable gasoline powered heater.
INMARSAT – Satellite communications for maritime/ship management, communications, and distress/safety applications. It is a global satellite system used by independent service providers to offer a range of voice and multimedia communications for customers on the move or in remote locations. INMARSAT has also expanded into land, mobile, and aeronautical communications.
Iridium Satellite Phones - Iridium is a satellite-based personal communication service supporting global voice, paging, messaging, and data services to mobile subscribers using handheld user terminals.
LAN – Local area Network used for computer systems.
LDB – Long Duration Balloon group (NASA) working out of Williams Field.
Loose Load – L/L, any cargo not restrained to a pallet.
MC1 – Movement Control One is the primary Point of Contact at McMurdo Station runways for all ATO passenger and cargo operations. The MC1's call sign is MC1 - <u>not</u> MCC.

Marine Container – a 20' or 40' cargo container used for commercial transportation that can move via ocean, rail or truck (intermodal).
Milk Stool – A heavy-duty stand used to support the ramp of C-130's during cargo operations.
MILVAN – Military Van, 20' or 40' container used for storage.
Mission (Sortie) – A flight operation of a single aircraft.
ORGEAR – Organizational Gear. Office files transported to and from the Antarctica.
Pack – Cargo Packaging type, i.e., boxes, crates, etc.
Pallet – A platform used for the transportation of goods

Air Force Pallet – Standard 463L, flat aluminum surface with balsa wood core, 2 ¼" high, 108" wide and 88" long with 22 steel tie down rings along the sides with a 7500 pound capacity each. Each 463L has a 10,000-pound cargo limit.

Warehouse Pallet – Two-deck platform, usually wooden, Approximately 42"wide, 42" wide and 5" high.

Pallet Party – Before a field party leaves for their remote site they meet with MCC personnel and prioritize their cargo.
Pallet Trains – Two or more Air Force pallets hooked together with USAF couplers for transporting oversized cargo by aircraft.
PAX – Passengers.
Piece – Number of items being shipped under a single TCN.
PTS – Personnel Tracking System, computer system used to track travel information for all USAP personnel.
Reefer Van – 20' or 40' refrigerated container.
RDD – Required Delivery Date, The date a piece of cargo is required to leave either McMurdo or Port Hueneme to meet its ROS date.
ROS – Receive on Site, the Date a piece of cargo is required to be on site at its final destination.
Redeployment – Passenger transport from Antarctica.
Retrograde Cargo – Cargo shipped from Antarctica back to its original destination.
STARS – Long distance, direct telephone system in Antarctica.
Seal Bladder or Drum – Large black collapsible fuel storage unit.
Skiway Drag – A leveling device used for smoothing skiways for aircraft operations.
Slave Pallet – A 463L pallet with three sides mounted on it for transporting small items of cargo.
Snow Plane – A towable, ski-mounted leveling device that has an adjustable cutting blade.
TCN – Transportation Control Number assigned to each piece of cargo for tracking its location at all times.
TDE – Tie down equipment used to restrain cargo to pallets or aircraft.
Tare Weight – the weight of an empty container.
Ton – A unit of weight measurement and follows:

Short Ton = 2,000 lbs.
Long Ton = 2,240 lbs.
Measurement Ton = 40 Cubic Feet

Trencher – A large self-propelled trenching device for digging trenched up to 12 feet deep. Also called by manufacturers name, Vermeer Trencher.

USAP Air Transportation Protocol – *United States Antarctic Program Air Transportation Guide* standardizes ATO, ANG, USAF, and RNZAF aircraft cargo/passenger handling procedures in Antarctica. It is designed to be upgraded annually from lessons-learned and provides a site-specific, logical tool to resolve on-ice cargo handling/passenger issues among the above agencies.
Voyage – An Ocean Vessel mission.
Wanagan – A NZ term for a small hut normally mounted on a sled for mobility.
WINFLY – Airlift missions flown to Pegasus Airfield prior to the beginning of the main Deep Freeze season (prior to the construction of the annual sea-ice runway), normally in August/September.

10.0 Cargo Identification Codes

10.1 Packaging Types

BD	Bundle
BG	Bag, burlap or cloth
BX	Box
CN	Can
CO	Container, other than CC, CM, CU, CW, MW or MX
CR	Crate
CS	Case
CT	Carton
CY	Cylinder
DB	Duffel Bag
DE	Dewar
Dr	Drum
LS	Loose load, not packaged
MD	Module
MW	Multiwall (triwall)
PC	Piece
PT	Palletized unit load other than code MW
RL	Reel
RO	Roll
SB	Skid, box
SD	Skid
SH	Sheet
SL	Spool

10.2 Special Cargo Handling Codes

DNF	Do Not Freeze	KC	Keep Chilled

DNP	Do Not Drop	KD	Keep Dry
DNX	Do Not X-Ray	KF	Keep Frozen
FRG	Fragile	KU	Keep Upright
MAG	Do not expose to magnetic fields	SEC	Security

10.3 DOD Project Codes

A three-character code used for cargo identification purposes by the USAP.

D = Operation Deep Freeze

Second Letter = Dept. or organization Number = Location

A	Meteorological	1	McMurdo Station
B	PAO/AFRTS	2	Not Used
C	Safety/Training	3	South Pole Station
D	NSF special projects	4	Not Used
E	Flammables/Fuels	5	Port Hueneme, CA
F	Hazardous Waste	6	Inland Field Camps
G	Supply	7	Palmer Station
H	Not Used	8	McMurdo Station
I	Administration	9	Christchurch, NZ
J	Ship's store	0	Not Used
K	MWR	A	Not Used
L	Medical/Dental	B	USCGC Polar Star
M	Food/Fresh produce	C	Not Used
N	Electronics/Comms	D	USCGC Polar Sea
O	Operations Dept.	Not assigned	Green Wave
P	Not Used		
Q	Not Used		
R	Science (NSF)		
S	NYANG General		**Special Codes**
T	ATO equipment	NBP	R/V N. B. Palmer
U	U.S. Mail/Guard Mail	CG1	USCG shipments to McMurdo
V	Passengers/Baggage	CG9	USCG shipments to Christchurch
W	RPSC General	IT1	IAP shipments to MCM
X	RPSC Construction & Engineering	IT2	IAP shipments to CHC
Y	Public Works	NZ8	ANZ shipments to MCM
Z	Not Used	NZ9	ANZ shipments to CHC

10.4 RPSC Project Codes

A three-digit number assigned to each division or work center. Current RPSC and DOD project codes in use are:

RPSC Project Code	DOD Project Code	LOCATION	WORK CENTER CODE
330	DW1	McMurdo	Waste Management
331	DX1	McMurdo	Carpentry W/C
332	DX1	McMurdo	Paint W/C
333	DX1	McMurdo	Metals W/C
334	DX1	McMurdo	Engineering
335	DX1	McMurdo	Electrical W/C
336	DX1	McMurdo	Plumbing W/C
337	DW1	McMurdo	Crash/Fire/Rescue
338	DW1	McMurdo	Environmental/Health/Safety
339	DZ3	South Pole	SPSM Overflow
340	DX1	McMurdo	CSEC construction/maintenance
341	DW1	McMurdo	Equipment Operations
342	DX1	McMurdo	Facilities Preventive Maintenance
343	DW1	McMurdo	Inland Field Camps
344	DW1	McMurdo	Antarctic Terminal Operations
345	DW1	McMurdo	Information Systems
345	DW3	South Pole	Information Systems - NPX
346	DW1	McMurdo	Housing
347	DM1/DW1	McMurdo	Food Services
348	DW1	McMurdo	Utilities
349	DW1	McMurdo	Fuels
350	DW1	McMurdo	BFC/food room
351	DW1	McMurdo	Lab and grantee support
352	DW1	McMurdo	Chalet/NSF
353	DW1	McMurdo	Vehicle Maintenance Facility
354	DX1	McMurdo	Construction
355	DM3	South Pole	Food Services
355	DW3	South Pole	General support and O&M
356	DX3	South Pole	NPX Construction
357	DX1	McMurdo	Central Supply
358	DW1	McMurdo	Mechanical Equipment Center
359	DW7	Palmer	Palmer O&M/general
360	LMG	R/V Laurence M. Gould	R/V Laurence M. Gould
361	DW9	Christchurch	Christchurch support
361	DR9	Christchurch	Grantee cargo
362	-	-	Not used
363	DW1/DW3	All	Ships store/Recreation/MWR

364	DR7	Palmer	Palmer Lab
365	DX7	Palmer	Palmer Construction
366	NBP	R/V N. B. Palmer	R/V Nathaniel B. Palmer/general
367	PUA	Punta Arenas	South America agents
368	DZ3	South Pole	SPSE/SPSM
369	DZ3	South Pole	SPSE/SPSM
390	DR1	McMurdo	Petroleum Helicopters Inc, (PHI)
NA	DS1/DS9	McMurdo/Christchurch	109th Air Wing
NA	DN1/DN9	McMurdo/Christchurch	Aviation Technical Services, (ATS)

Note: Guard Mail will use the project code: GMAL
Cruise Box will use the project code: CBOX
Passenger Baggage will use the project code: PBAG

10.5 Event Codes

G-Event – 109th Airlift Wing Sponsored Event
R-Event – RPSC sponsored event
T-Event – NSF Sponsored Technical Event
V-Event – Distinguished Visitors
W-Event – Photographers, Artists, and Writers event
Z-Event – ATS Sponsored event

10.6 TCN

The Transportation Control Number is a number assigned to each piece of cargo for tracking purposes within the cargo tracking system (CTS). The number is printed on a label with an accompanying bar code and affixed to each piece of cargo. Each part of the TCN number has a specific meaning given in the example below:

N64157-0132-P001-XXX

N64157	**0**	**132**	**P**	**001**	**XXX**
Unit Identifier	Seasonal Year	Project Number	Transport Mode	Log Number	Split-Shpmnt Code
N64157-RPSC, NSF 096599-US Mail (N) 096531-US Mail (S) SBNZXX-AntNZ(N) NZSBXX-AntNZ(S) N65236-ATS FB6323-ANG (N) Northbound (S) Southbound	200**0** 0 will be used for the entire 2000 - 2001 season even after entering 2001	RPSC project code from above table or the appropriate event code (or for military shipments, the Julian Date)	Origin ZCM: Alpha designator for destination Origin PTH&CHC: 0 = Kilo Air 2 = Vessel 5 = SAAM, MAC channel, WINFLY, U.S. Mail, Airdrop 6 = Commercial air (Assigned by PTH)	Ascending sequential numbering system within each project starting with 001. Allocation: ZCM 001-300 NPX 301-600 CHC 601-800 NBP 801-999	Permits a TCN to be split if it contains multiple items or requires multiple pallets Letter series starting with XAX and always ending with XZX

Appendix A: USAP Air Transportation Protocol Process Change Control Procedure

It is recognized that the USAP Air Transportation Protocol does not cover every situation or contingency. In order to keep this document current (and more importantly operating practices, procedures, and techniques), there must be a means by which new practices, procedures, and techniques are recommended, staffed, studied, funded, approved, and adopted. To minimize inter-agency conflict and ad-hoc approaches to operational changes, all requests for such changes must be appropriately agreed upon by all concerned parties. The following form is an outline of the assessments and steps that must be followed to implement USAF/ATO/ANG/RNZAF-related changes to established processes and equipment.

Process Change Control Procedure Form

(Cargo Sled Example)

1. Date of Request: 13MAY01_____

2. Authorized individual making request: Carl J. Williams, RPS ATO Manager_____

3. Process/Equipment to be changed: McMurdo and South Pole cargo sleds_____

4. Justification: To minimize the risk of aircraft and cargo damage, improve the efficiency and effectiveness of South Pole and McMurdo cargo handling and flight operations, and reduce safety risks to ground and aircrew personnel using cargo sleds.___

5. Proposed changes: (a) Remove all horizontally protruding pad-eyes from every cargo sled-end to eliminate aircraft/sled collision hazards (assess the vertical tow-bar pad-eye hazard to aircraft)._____

(b) Move the two inner sets of top rollers back to the sled edge to facilitate off-balance pallet movement while accommodating aircraft truck loading ramps._____

(c) Mount two (inner-reinforced at the connection point) half-tire fenders (tires must not be any larger than the current Ford van tires in use at McMurdo) on each sled-end for an aircraft ramp cushion that can withstand severe end-impacting._____

(d) Verify that all rollers are of uniform height and model – replace and adjust as necessary._____

(e) Craft a pintle-type hitch system for all cargo sleds and loaders that facilitate the usage of a "Stinger-type" sled maneuvering system (already in use at the South Pole)._____

(f) Purchase 6 new "Stinger" sled maneuvering bars – (2) South Pole, (4) McMurdo for WINFLY and KILO AIR delivery._____

(g) The above modifications must be made to all South Pole and McMurdo cargo sleds._

(h) Mount UHMW or a similar anti-friction material to a test sled's runners at McMurdo during WINFLY to assess its effect on mitigating the recurring friction-freezing problem.

(i) Test one of McMurdo's new CAT 950 foam-filled tire loaders in moving stuck cargo sleds to improve operational control and safety at the South Pole and McMurdo airfields. If successful, deploy one new CAT 950 to the South Pole while keeping one at McMurdo for airfield cargo handling/sled movement operations. If unsuccessful, consider purchasing a CAT 973 tracked-loader or test a Challenger for each runway._____

6. Analytical assessment of proposed changes: The RPS Engineering Department will conduct a thorough technical analysis of this proposal and approve/disapprove any changes along with its detailed assessment, rationale, modification plans, and informed final findings. The RPS Operations Department will carry out any approved modifications by the date(s) below. _____

7. Time/materials required to implement change: All sled modifications must be completed by the start of KILO AIR operations on 02OCT01 with one sled being completed by the start of WINFLY on 20AUG01. Only one test sled will be outfitted with UHMW material on its runners (or some other friction-reducing material) for testing during WINFLY. Required materials will be evaluated, selected, and procured by the Engineering and Operations Departments after analyzing the above problems and determining the most suitable corrective action to ensure operational success._____

8. Cost/labor estimate: TBD by RPS Engineering and Operations_____

9. Expected final completion date: 02OCT01_____

10. Changes funded by: Raytheon Polar Services_____

11. ANG Review POC: Colonel Max Della Pia, 109th Wing Commander_____

12. Raytheon Review Panel: Rich Boehne, Operations Director and Tom Yelvington, Facilities and Engineering Director (Acting)_____

13. CODF/USAF concurrence: Colonel Joel Maynard, CODF_____

14. Raytheon Director (or Area Manager) concurrence: Mike Embree, Logistics Director_____

15. Work Order Number, Submission Date, and Submitting Department: ATO will submit the work order upon receipt of technical evaluation and final approval of changes.

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Appendix B: USAF Concurrent Fueling At Remote Sites Authorization Letter

DEPARTMENT OF THE AIR FORCE
AIR NATIONAL GUARD DETACHMENT 13

17 January 2001

MEMORANDUM FOR 109 EAS/CC
JOHN HAHN, OPERATIONS SUPERVISOR, SOUTH POLE

FROM: ANG DET 13/CC

SUBJECT: Concurrent Fuel Servicing at Remote Sites

Due to the extreme weather conditions encountered in Antarctica, Aircraft Commanders are authorized to refuel aircraft with engines running and passengers on board at sites where standard passenger service facilities are not available. Concurrent servicing has been authorized in accordance with AFI 11-2C130, Vol. 3, *C-130 Operations Procedures* and TO 00-25-172, *Ground Servicing of Aircraft and Static Grounding / Bonding*. 109 EAS personnel may perform remote fueling/concurrent servicing using Chapter 10, Annex A, *Remote Fueling Checklist.*

//Signed//
RICHARD M. SABURRO, Col, USAF
Commander, Operation DEEP FREEZE

cc: Carl Williams, ATO Manager, McMurdo

Appendix C: Standard Planning Weights and Measures

FUEL WEIGHT (based on the McMurdo ambient air temperature)**: 6.8 pounds/gallon**

PASSENGER WEIGHT (including pax weight, all baggage, and survival bags)**:** CHC-MCM & MCM-CHC = **310 pounds**; MCM-SP & SP-CHC = **330 pounds**

TIE-DOWN EQUIPMENT (TDE) WEIGHT: CHC-MCM & MCM-CHC = **6.7% of load**; MCM-SP & SP-MCM = **7.9% of load**

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Appendix D: Operating Weight and Moments For 109th AW LC-130 Aircraft

SKIER (tail number)	OPERATING WEIGHT (pounds)	MOMENTS (pounds)
90	*TBD*	*TBD*
91	*TBD*	*TBD*
92	*TBD*	*TBD*
93	*TBD*	*TBD*
94	*TBD*	*TBD*
95	*TBD*	*TBD*
96	*TBD*	*TBD*

Note: Please contact the senior loadmaster for the specific aircraft above (in Antarctica) for current figures at the beginning of each season.

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